ARBITRATION UNDER ANNEX VII OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

REPUBLIC OF THE PHILIPPINES

v.

PEOPLE'S REPUBLIC OF CHINA

MEMORIAL OF THE PHILIPPINES

VOLUME VII
ANNEXES

30 MARCH 2014

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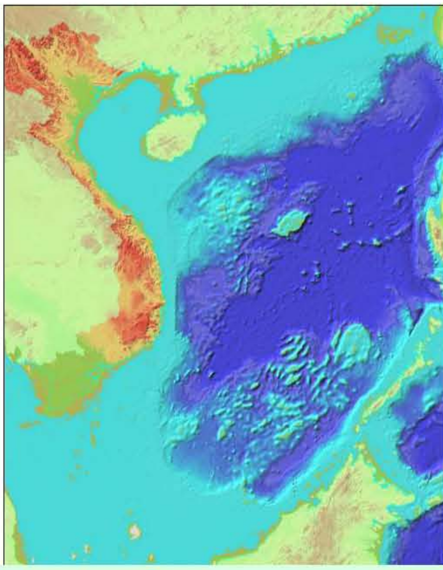
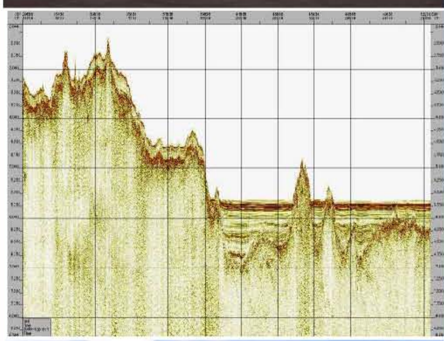


SOCIALIST REPUBLIC OF VIETNAM

SUBMISSION TO THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF PURSUANT TO ARTICLE 76, PARAGRAPH 8 OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA 1982

PARTIAL SUBMISSION IN RESPECT OF VIETNAM'S EXTENDED CONTINENTAL SHELF: NORTH AREA (VNM-N)



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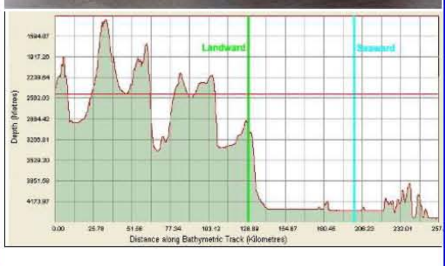
VNM-N-ES-DOC

APRIL 2009



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Bathymetric map of the East Sea

SOCIALIST REPUBLIC OF VIETNAM

**SUBMISSION TO THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF
PURSUANT TO ARTICLE 76, PARAGRAPH 8 OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA 1982**

PARTIAL SUBMISSION IN RESPECT OF VIETNAM'S EXTENDED CONTINENTAL SHELF: NORTH AREA (VNM-N)

PART I - EXECUTIVE SUMMARY

VNM-N-ES-DOC

Seismic survey vessel used by Vietnam

The following departments and agencies of the Government of the Socialist Republic of Vietnam are responsible to this submission :

Ministry of Foreign Affairs
Ministry of Natural Resources and Environment
Ministry of Science and Technology
Institute of Marine Geology and Geophysics
Institute of Geography
Department of Survey and Mapping of Vietnam
Hydrographic Survey and Mapping Department, Vietnam Navy
PetroVietnam

Scientific and Technical Advisors: National Oceanography Centre, Southampton,UK

Part of cross seismic section

Vietnamese Hydrographic survey vessel

APRIL 2009

Part of bathymetric section

ISBN 978-604-9800-01-6

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1. Introduction

The Socialist Republic of Vietnam (Vietnam), one of the coastal States bordering the East Sea, has a coastline approximately 3,260 km in length and has sovereignty over Hoang Sa and Truong Sa archipelagoes as well as more than 3000 islands and islets covering a large part of the East Sea. Hoang Sa and Truong Sa archipelagoes are located in the North and in the South East of the East Sea respectively. Vietnam is of the view that it is entitled to exercise the sovereignty, sovereign rights and national jurisdiction in maritime zones and continental shelf of Vietnam in accordance with the United Nations Convention on the Law of the Sea (UNCLOS 1982).

The Socialist Republic of Vietnam signed UNCLOS 1982 on the 10^{th} December 1982 and ratified the same on the 23^{rd} June 1994.

Pursuant to the provisions of UNCLOS 1982 and the natural setting and characteristics of Vietnam's coast and continental shelf, Vietnam holds the views that it is entitled to establish the extended continental shelf beyond 200 nautical miles (M) from the baselines from which the breadth of the territorial sea of the Socialist Republic of Vietnam is measured.

In accordance with Paragraph 3 of Annex I to the Commission's Rules of Procedures, this Submission is a partial submission which delineates the outer limits of a portion of the continental shelf beyond 200 M from the baselines from which the breadth of the territorial sea of the Socialist Republic of Vietnam is measured in respect of Vietnam's extended continental shelf: North Area (VNM-N) appurtenant to Vietnam.

This Submission by the Socialist Republic of Vietnam on the extended continental shelf has been prepared using datasets acquired by dedicated surveys in 2007, 2008 and datasets from the public domain including bathymetry, magnetic, gravity and seismic data.

This Submission in respect of the VNM-N Area refers to an area defined as follows:

The Northern boundary is the equidistance line between the territorial sea baselines of Vietnam and the territorial sea baselines of the People's Republic of China; the Eastern and Southern boundaries are the outer limits of the continental shelf as defined in this Submission pursuant to Article 76 (8) of the UNCLOS 1982; the Western boundary is 200 M limit from the baselines from which the breadth of the territorial sea of the Socialist Republic of Vietnam is measured.

2. Specific provisions of Article 76 invoked to support the Submission

The outer limits delineated in this Submission are based on the provisions of Paragraphs 1, 4, 5 and 7 Article 76.

3. Names of Commission members who provided advice during the preparation of the Submission

None of the members of the Commission on the Limits of the Continental Shelf (Commission) assisted Vietnam in the preparation of the Submission.

4. Absence of disputes

In accordance with Paragraph 2(a) of Annex I to the Commission's Rules of Procedures, Vietnam wishes to inform the Commission that there is a common understanding that the area of continental shelf which is the subject of this Submission is of overlapping interests expressed by relevant coastal States. Nevertheless, subject to the provisions of UNCLOS 1982, Vietnam is of the view that the area of continental shelf that is the subject of this Submission is not a subject of any overlap and dispute.

Further, Vietnam wishes to assure the Commission that in accordance with Article 76(10) of the UNCLOS 1982, Article 9 Annex II to the UNCLOS 1982, Rule 46 and Annex I of the Commission's Rules of Procedure, this Submission is without prejudice to the maritime delimitation between Vietnam and other relevant coastal States.

Vietnam has undertaken efforts to secure the non-objection of the other relevant coastal States.

5. Detailed description of the outer limits of Vietnam's extended continental shelf: North Area (VNM-N)

Vietnam has delineated the outer limits of the Vietnam's extended continental shelf: North Area (VN-N) by application of both 1% sediment thickness formula (the

Gardiner formula) and the Foot of the slope (FOS) + 60 M formula (the Hedberg formula).

Accordingly, 45 fixed points have been established which delineate the outer limits of the Vietnam's extended continental shelf: North Area (VNM-N). The outer limits are illustrated in Figure 1**.** The list of the geographical coordinates of the fixed points delineating the outer limits of the VNM-N Area and the lengths of the connecting straight lines are listed in Table 1**.**

6. State Agencies responsible for the preparation of the Submission

This Submission, together with all maps, figures, tables, appendices and data bases were prepared by an interagency team consisting of:

Ministry of Foreign Affairs

Ministry of Natural Resources and Environment

Ministry of Science and Technology

Institute of Marine Geology and Geophysics

Institute of Geography

Department of Survey and Mapping of Vietnam

Hydrographic Survey and Mapping Department, Vietnam Navy

PetroVietnam

<u>Scientific and Technical Advisors:</u> National Oceanography Centre, Southampton, United Kingdom

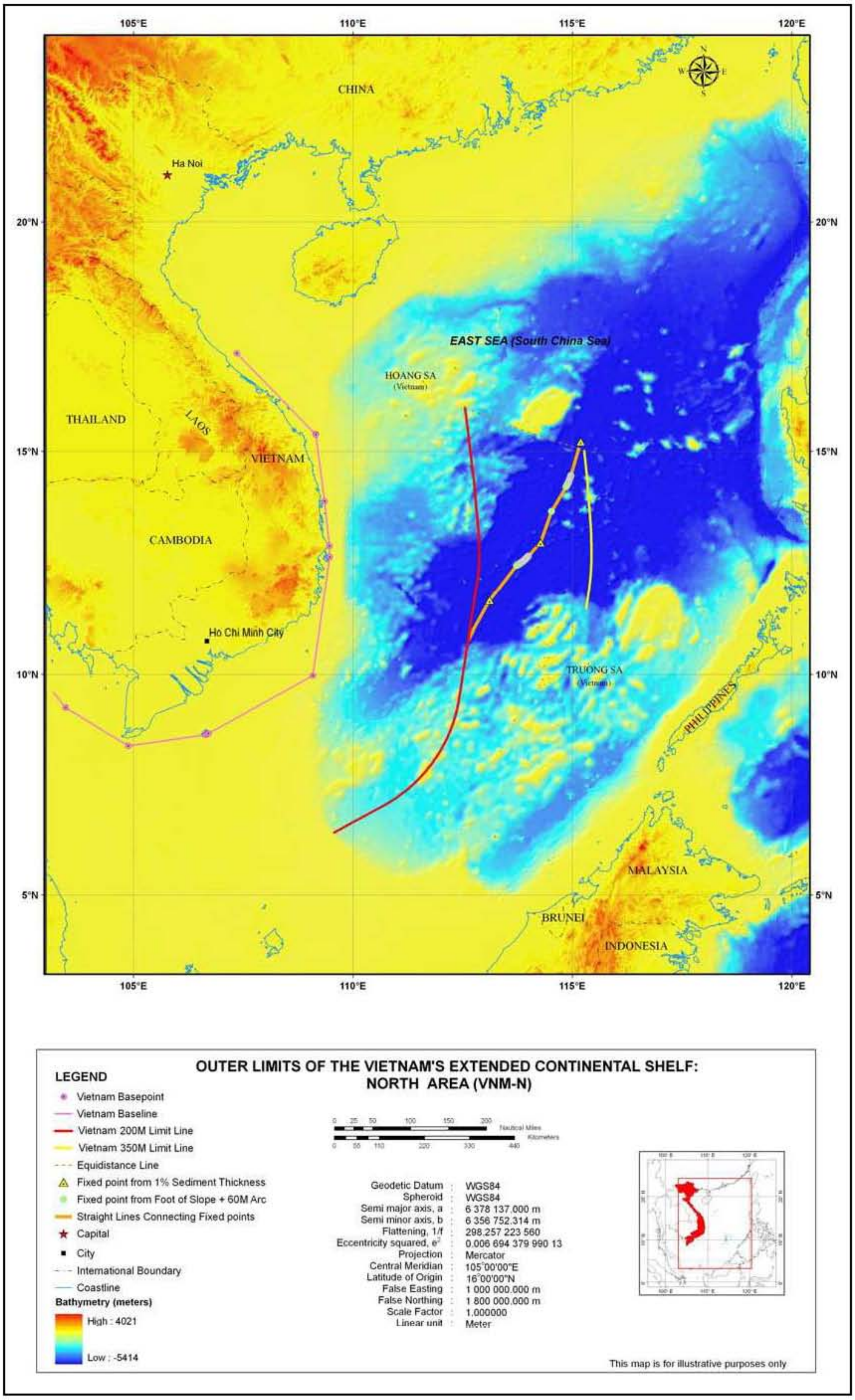


Figure 1 Outer limits of the Vietnam's extended continental shelf: North Area (VNM-N)

Table 1 Fixed points delineating the outer limits of Vietnam's extended continental shelf: North Area (VNM-N)

FP	Latitude (N)	Longitude (E)	Method	From FP	To FP	Distance (M)
1	15.06712679	115.1484514	Fixed point at intersection of formula line and equidistance line			
2	14.46148214	114.9690619	Fixed point from 60M envelope of arcs generated from FOS2	1	2	37.60
3	14.45774503	114.9679788	Fixed point from 60M envelope of arcs generated from FOS2	2	3	0.23
4	14.44171559	114.9630365	Fixed point from 60M envelope of arcs generated from FOS2	3	4	1.00
5	14.42576848	114.9578215	Fixed point from 60M envelope of arcs generated from FOS2	4	5	1.00
6	14.40990809	114.9523352	Fixed point from 60M envelope of arcs generated from FOS2	5	6	1.00
7	14.3941389	114.9465794	Fixed point from 60M envelope of arcs generated from FOS2	6	7	1.00
8	14.37846511	114.9405556	Fixed point from 60M envelope of arcs generated from FOS2	7	8	1.00
9	14.36289122	114.9342655	Fixed point from 60M envelope of arcs generated from FOS2	8	9	1.00
10	14.34742153	114.927711	Fixed point from 60M envelope of arcs generated from FOS2	9	10	1.00
11	14.33206016	114.920894	Fixed point from 60M envelope of arcs generated from FOS2	10	11	1.00
12	14.31681151	114.9138163	Fixed point from 60M envelope of arcs generated from FOS2	11	12	1.00
13	14.3016797	114.9064799	Fixed point from 60M envelope of arcs generated from FOS2	12	13	1.00
14	14.28666895	114.8988869	Fixed point from 60M envelope of arcs generated from FOS2	13	14	1.00
15	14.27178338	114.8910396	Fixed point from 60M envelope of arcs generated from FOS2	14	15	1.00
16	14.25702712	114.8829401	Fixed point from 60M envelope of arcs generated from FOS2	15	16	1.00
17	14.24240421	114.8745906	Fixed point from 60M envelope of arcs generated from FOS2	16	17	1.00
18	14.22791877	114.8659937	Fixed point from 60M envelope of arcs generated from FOS2	17	18	1.00
19	14.21357467	114.8571515	Fixed point from 60M envelope of arcs generated from FOS2	18	19	1.00
20	13.66737996	114.526433	Fixed point from 60M envelope of	19	20	37.90

			arcs generated from FOS3			
21	12.97168998	114.27286	Fixed point at 1% sediment thickness from FOS5	20	21	44.14
22	12.66783774	113.9938265	Fixed point from 60M envelope of arcs generated from FOS5	21	22	24.44
23	12.6654806	113.9916323	Fixed point from 60M envelope of arcs generated from FOS5	22	23	0.19
24	12.65548164	113.982325	Fixed point from 60M envelope of arcs generated from FOS5	23	24	0.81
25	12.64331504	113.9706166	Fixed point from 60M envelope of arcs generated from FOS5	24	25	1.00
26	12.63134108	113.9587045	Fixed point from 60M envelope of arcs generated from FOS5	25	26	1.00
27	12.61956318	113.9465919	Fixed point from 60M envelope of arcs generated from FOS5	26	27	1.00
28	12.6079845	113.9342823	Fixed point from 60M envelope of arcs generated from FOS5	27	28	1.00
29	12.59660836	113.9217792	Fixed point from 60M envelope of arcs generated from FOS5	28	29	1.00
30	12.58543782	113.9090858	Fixed point from 60M envelope of arcs generated from FOS5	29	30	1.00
31	12.57447594	113.8962057	Fixed point from 60M envelope of arcs generated from FOS5	30	31	1.00
32	12.56372577	113.8831425	Fixed point from 60M envelope of arcs generated from FOS5	31	32	1.00
33	12.55319028	113.8698999	Fixed point from 60M envelope of arcs generated from FOS5	32	33	1.00
34	12.54287234	113.8564816	Fixed point from 60M envelope of arcs generated from FOS5	33	34	1.00
35	12.53277482	113.842891	Fixed point from 60M envelope of arcs generated from FOS5	34	35	1.00
36	12.52290041	113.8291322	Fixed point from 60M envelope of arcs generated from FOS5	35	36	1.00
37	12.5132519	113.8152088	Fixed point from 60M envelope of arcs generated from FOS5	36	37	1.00
38	12.50383196	113.8011248	Fixed point from 60M envelope of arcs generated from FOS5	37	38	1.00
39	12.49464319	113.7868839	Fixed point from 60M envelope of arcs generated from FOS5	38	39	1.00
40	12.48568811	113.7724902	Fixed point from 60M envelope of arcs generated from FOS5	39	40	1.00
41	12.47696911	113.7579476	Fixed point from 60M envelope of arcs generated from FOS5	40	41	1.00

42	12.46848862	113.7432602	Fixed point from 60M envelope of arcs generated from FOS5	41	42	1.00
43	12.46035674	113.7286256	Fixed point from 60M envelope of arcs generated from FOS5	42	43	1.00
44	11.67141998	113.11072	Fixed point at 1% sediment thickness from FOS7	43	44	59.50
45	10.79843008	112.6262326	Fixed point on Vietnam's 200M limit	44	45	59.47

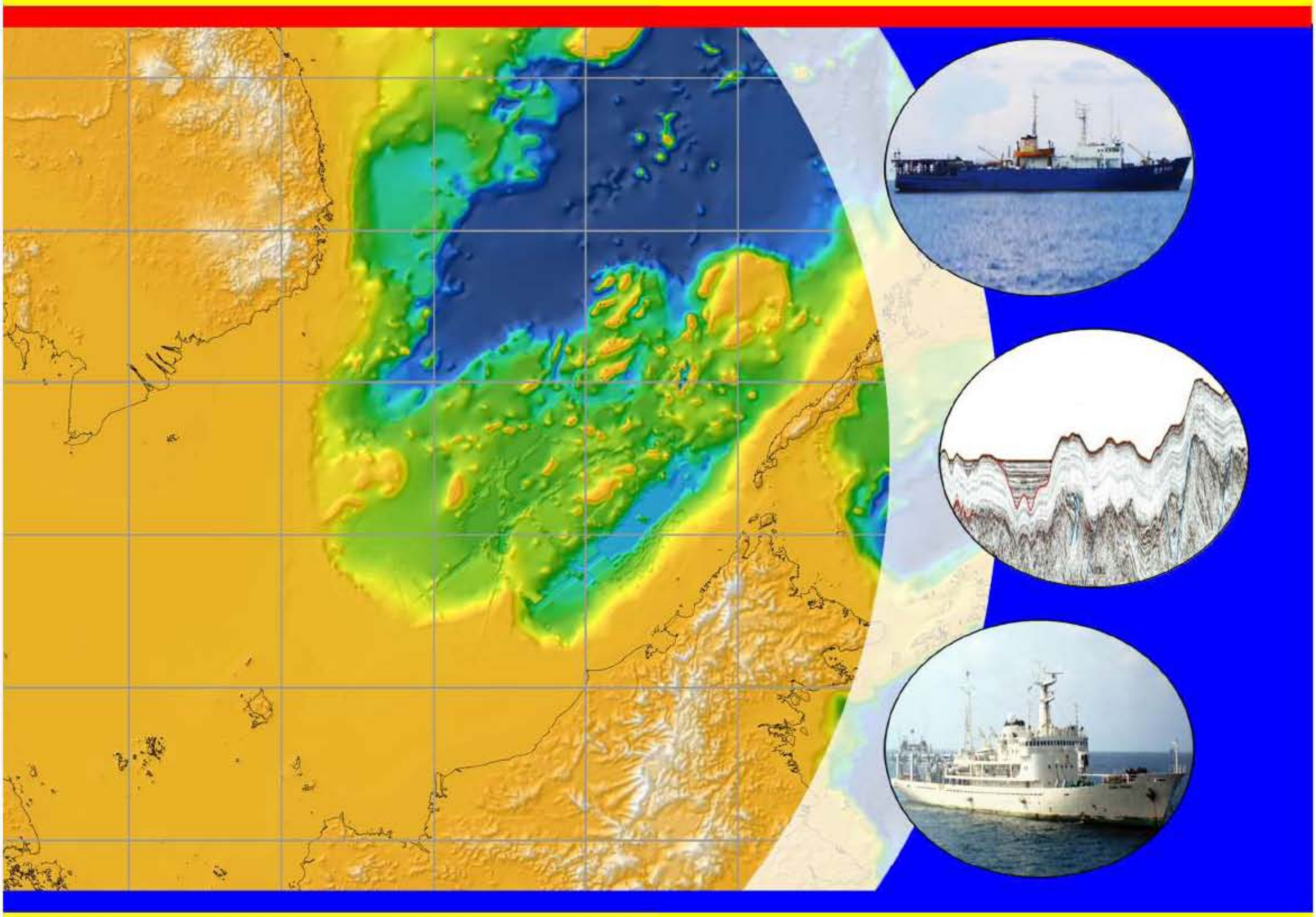
Annex 223

Malaysia and the Socialist Republic of Vietnam, *Joint Submission to the Commission on the Limits of the Continental Shelf, in Respect of the Southern Part of the South China Sea* (6 May 2009)

JOINT SUBMISSION

to the Commission on the Limits of the Continental Shelf pursuant to Article 76, paragraph 8 of the United Nations Convention on the Law of the Sea 1982 in respect of the southern part of the South China Sea

Part I : EXECUTIVE SUMMARY



Malaysia **Socialist Republic of Vietnam**

May 2009

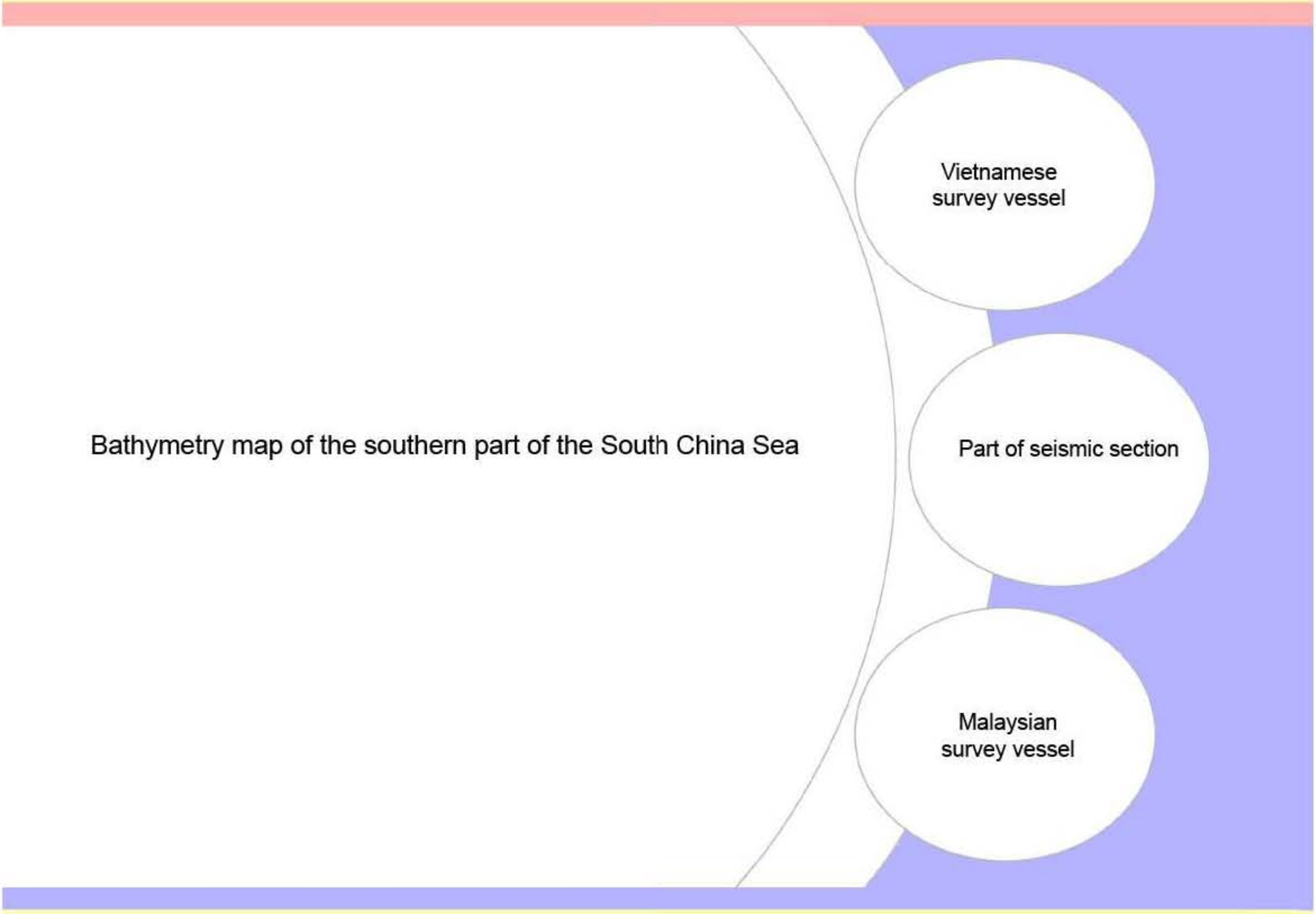
The following departments and agencies of the Governments of Malaysia and the Socialist Republic of Vietnam are responsible to this submission:

Malaysia

National Security Council,
Prime Minister's Department;
Ministry of Foreign Affairs;
The Attorney General's Chambers;
Department of Survey and Mapping;
Minerals and Geoscience Department;
National Hydrographic Centre
of the Royal Malaysian Navy; and
Petroliam Nasional Berhad (PETRONAS).

Socialist Republic of Vietnam

Ministry of Foreign Affairs;
Ministry of Natural Resources and Environment;
Ministry of Science and Technology;
Institute of Marine Geology and Geophysics;
Institute of Geography;
Department of Survey and Mapping of Vietnam;
Hydrographic Survey and Mapping Department,
Vietnam Navy; and
Vietnam Oil and Gas Group (PETROVIETNAM).



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Part I

EXECUTIVE SUMMARY

1. INTRODUCTION

1.1 This Joint Submission to the Commission on the Limits of the Continental Shelf (the "Commission") is prepared jointly and collectively by Malaysia and the Socialist Republic of Vietnam (collectively referred to as the "two coastal States") pursuant to Article 76 of the United Nations Convention on the Law of the Sea 1982 ("UNCLOS 1982"), in accordance with Scientific and Technical Guidelines of the Commission on the Limits of the Continental Shelf (CLCS/11/Add.1) ("the Guidelines") and the Rules of Procedure of the Commission (CLCS/40/Rev.1) (the "Commission's Rules of Procedure") for the delineation of the outer limits of their continental shelf.

1. 2 Malaysia signed UNCLOS 1982 on 10 December 1982 and ratified the same on 14 October 1996. The Socialist Republic of Vietnam (Vietnam) signed UNCLOS 1982 on the 10th December 1982 and ratified the same on the 23rd June 1994.

1.3 In accordance with Paragraph 3 of Annex I to the Commission's Rules of Procedure, this Joint Submission is a submission for only a portion of the two coastal States' continental shelf. It relates to an area, as shown in **Figure 1** and as described in paragraph 5.1, which is entirely landward of the outer edge of the two coastal States' continental margin ("Defined Area"). The two coastal States may make further submissions, either jointly or unilaterally, in respect of other areas.

2. PROVISIONS OF ARTICLE 76 OF UNCLOS 1982 INVOKED

2.1 The limits of the continental shelf in the Defined Area of the two coastal States' continental shelf are based on the provisions of Article 76 (4) and (5) of UNCLOS 1982.

3. COMMISSION MEMBERS WHO PROVIDED ADVICE DURING THE PREPARATION OF THIS JOINT SUBMISSION

3.1 The two coastal States were assisted in the preparation of this Joint Submission by Mr. Abu Bakar Jaafar, member of the Commission on the Limits of the Continental Shelf (1997 - present). No advice was provided by any other member of the Commission.

4. DISPUTES

4.1 The two coastal States wish to inform the Commission that there are unresolved disputes in the Defined Area of this Joint Submission. This Joint Submission has taken into consideration the provisions of Article 76 (10) of UNCLOS 1982, Article 9 of Annex II to UNCLOS 1982, Rule 46 to the Commission's Rules of Procedure, and Paragraphs 1, 2 and 5 of Annex I to the Commission's Rules of Procedure.

4.2 In accordance with the above provisions, the two coastal States wish to assure the Commission, to the extent possible, that this Joint Submission will not prejudice matters relating to the delimitation of boundaries between States with opposite or adjacent coasts.

4.3 The two coastal States have undertaken efforts to secure the non-objection of the other relevant coastal States. The two coastal States affirm that this Joint Submission is in consonance with Paragraph 5 (b) of Annex I to the Commission's Rules of Procedure.

5. DESCRIPTION OF THE LIMITS OF THE CONTINENTAL SHELF IN THE DEFINED AREA

5.1 The limits are generated and bound by the intersection point of the envelope of arcs of 200 nautical miles (M) limits of Malaysia and the Philippines in the east (Point A), the intersection of two converging envelope of arcs of Malaysia's 200 M limits towards the south west from A (Points B and C), the intersection point of Malaysia's 200 M limit and the boundary line under the Agreement between the Government of Malaysia and the Government of the Republic of Indonesia relating to the delimitation of the Continental Shelves between the two countries 1969 towards the south west (Point D), Point 25 under the aforementioned Agreement towards the north west (Point E), Point 25 under the Agreement between the Government of the Socialist Republic of Vietnam and the Government of the Republic of Indonesia on the delimitation of the Continental Shelf Limit 2003 towards the north west (Point F), and the intersection point under the aforementioned Agreement towards the north west (Point G) and the envelope of arcs of Vietnam's 200 M limits towards the north east (Points H and I). The limits consist of 810 Fixed Points as listed in **Table 1**.

6. STATE AGENCIES RESPONSIBLE FOR THE PREPARATION OF THIS JOINT SUBMISSION

6.1 This Joint Submission together with all maps, figures, enclosures, appendices and databases was prepared by the two coastal States' agencies as follows:

The Malaysian Government's Agencies

(a) National Security Council of the Prime Minister's Department;
(b) Ministry of Foreign Affairs;
(c) The Attorney General's Chambers;
(d) Department of Survey and Mapping;
(e) Minerals and Geoscience Department;
(f) National Hydrographic Centre of the Royal Malaysian Navy; and
(g) Petroliam Nasional Berhad (PETRONAS).

The Socialist Republic of Vietnam Government's Agencies

(a) Ministry of Foreign Affairs;

(b) Ministry of Natural Resources and Environment;

(c) Ministry of Science and Technology;

(d) Institute of Marine Geology and Geophysics;

(e) Institute of Geography;

(f) Department of Survey and Mapping of Vietnam;

(g) Hydrographic Survey and Mapping Department, Vietnam Navy; and

(h) Vietnam Oil and Gas Group (PETROVIETNAM).

7. MAP AND COORDINATES

7.1 **Figure 1** illustrates the limits of the continental shelf in the Defined Area that is the subject of this Joint Submission. The geographical coordinates in World Geodetic System 1984 (WGS84) of the limits of the continental shelf in the Defined Area and the methods of computation are listed in **Table 1**.

7.2 **Figure 2** illustrates the outer edge of the continental margin established for this Joint Submission. The geographical coordinates in WGS84 of the formula fixed points used in the establishment of the outer edge of the continental margin are listed in **Table 2**.

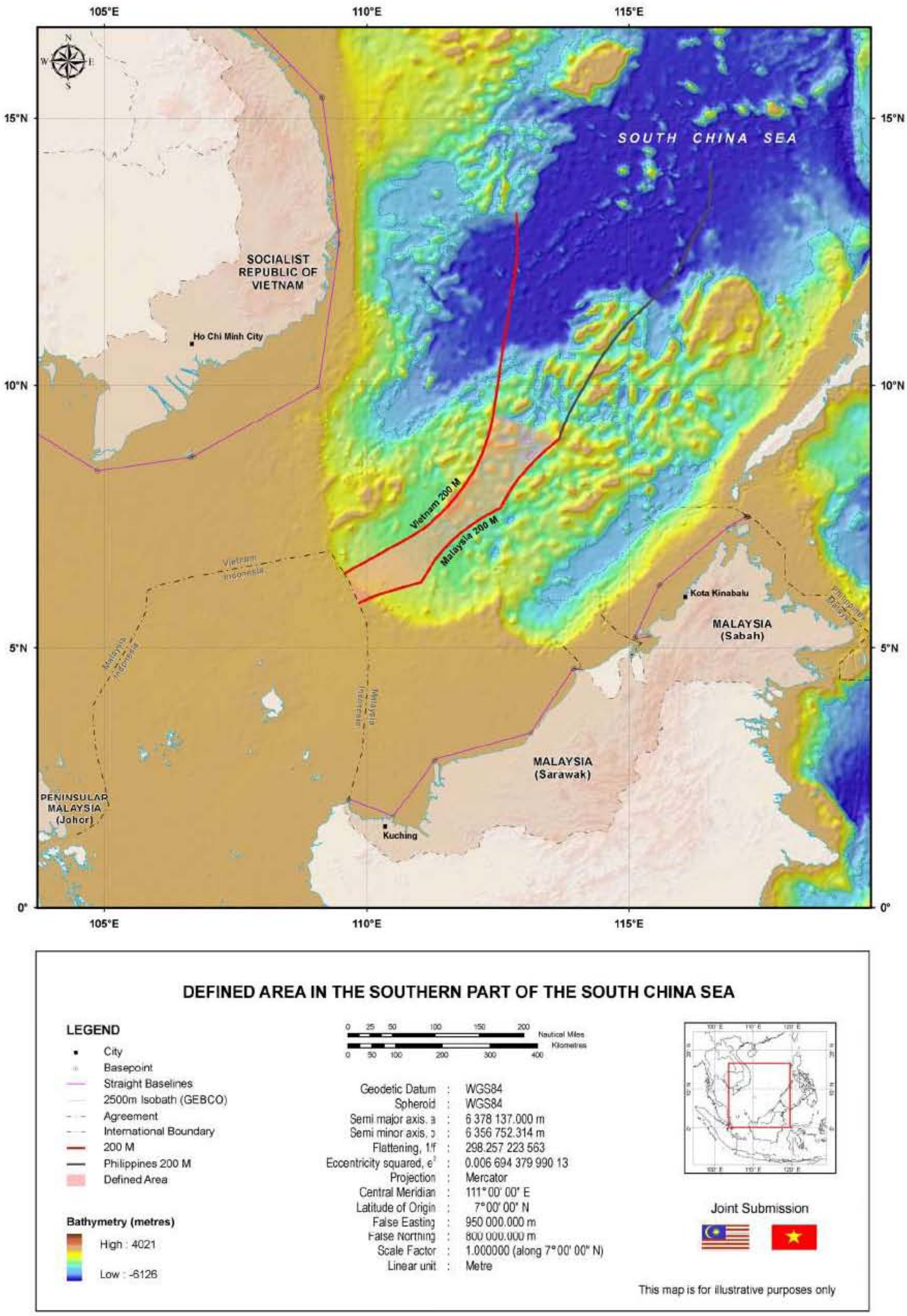

Figure 1 Defined Area in the southern part of the South China Sea

Table 1

List of Geographical Coordinates of the Limits of the Continental Shelf in the Defined Area (All Coordinates are in WGS84)

Defined Area Point ID	Latitude (N)			Longitude (E)			Description
	°	'	"	°	'	"	
1	8	59	4.1	113	40	37.6	Point A : Intersection of the envelope of arcs of 200 M limits of Malaysia and the Philippines
2	8	53	38.6	113	34	7.6	200 M Malaysia
3	8	47	10.6	113	26	23.1	200 M Malaysia
4	8	47	3.7	113	26	14.9	200 M Malaysia
5	8	46	42.7	113	25	49.9	200 M Malaysia
6	8	46	21.7	113	25	25.0	200 M Malaysia
7	8	46	0.6	113	25	0.1	200 M Malaysia
8	8	45	39.4	113	24	35.3	200 M Malaysia
9	8	45	18.1	113	24	10.5	200 M Malaysia
10	8	44	56.8	113	23	45.8	200 M Malaysia
11	8	44	35.4	113	23	21.2	200 M Malaysia
12	8	44	14.0	113	22	56.6	200 M Malaysia
13	8	43	52.5	113	22	32.0	200 M Malaysia
14	8	43	30.9	113	22	7.6	200 M Malaysia
15	8	43	9.3	113	21	43.2	200 M Malaysia
16	8	42	47.5	113	21	18.8	200 M Malaysia
17	8	42	25.8	113	20	54.5	200 M Malaysia
18	8	42	20.7	113	20	49.0	200 M Malaysia
19	8	42	3.9	113	20	30.3	200 M Malaysia
20	8	41	42.0	113	20	6.1	200 M Malaysia
21	8	41	20.0	113	19	42.0	200 M Malaysia
22	8	40	58.0	113	19	18.0	200 M Malaysia
23	8	40	35.9	113	18	54.0	200 M Malaysia
24	8	40	13.7	113	18	30.1	200 M Malaysia
25	8	39	51.5	113	18	6.2	200 M Malaysia
26	8	39	29.2	113	17	42.4	200 M Malaysia
27	8	39	6.8	113	17	18.6	200 M Malaysia
28	8	38	44.4	113	16	55.0	200 M Malaysia
29	8	38	21.9	113	16	31.3	200 M Malaysia
30	8	37	59.4	113	16	7.8	200 M Malaysia
31	8	37	36.7	113	15	44.3	200 M Malaysia
32	8	37	29.8	113	15	37.1	200 M Malaysia
33	8	37	7.1	113	15	13.6	200 M Malaysia
34	8	36	49.0	113	14	54.9	200 M Malaysia
35	8	36	33.5	113	14	38.9	200 M Malaysia
36	8	36	10.8	113	14	15.5	200 M Malaysia
37	8	35	48.0	113	13	52.2	200 M Malaysia
38	8	35	25.1	113	13	29.0	200 M Malaysia
39	8	35	2.2	113	13	5.8	200 M Malaysia
40	8	34	39.2	113	12	42.7	200 M Malaysia
41	8	34	16.1	113	12	19.6	200 M Malaysia
42	8	33	53.0	113	11	56.6	200 M Malaysia

43	8	33	29.8	113	11	33.7	200 M Malaysia
44	8	33	6.6	113	11	10.8	200 M Malaysia
45	8	32	43.3	113	10	48.0	200 M Malaysia
46	8	32	19.9	113	10	25.3	200 M Malaysia
47	8	31	56.5	113	10	2.6	200 M Malaysia
48	8	31	33.0	113	9	40.0	200 M Malaysia
49	8	31	9.4	113	9	17.4	200 M Malaysia
50	8	30	45.8	113	8	55.0	200 M Malaysia
51	8	30	22.2	113	8	32.5	200 M Malaysia
52	8	29	58.4	113	8	10.2	200 M Malaysia
53	8	29	34.6	113	7	47.9	200 M Malaysia
54	8	29	10.8	113	7	25.7	200 M Malaysia
55	8	28	46.9	113	7	3.5	200 M Malaysia
56	8	28	22.9	113	6	41.4	200 M Malaysia
57	8	27	58.9	113	6	19.4	200 M Malaysia
58	8	27	34.8	113	5	57.4	200 M Malaysia
59	8	27	10.6	113	5	35.6	200 M Malaysia
60	8	26	46.4	113	5	13.7	200 M Malaysia
61	8	26	22.2	113	4	52.0	200 M Malaysia
62	8	25	57.8	113	4	30.3	200 M Malaysia
63	8	25	33.4	113	4	8.6	200 M Malaysia
64	8	25	9.0	113	3	47.1	200 M Malaysia
65	8	24	44.5	113	3	25.6	200 M Malaysia
66	8	24	20.0	113	3	4.2	200 M Malaysia
67	8	23	55.3	113	2	42.8	200 M Malaysia
68	8	23	30.7	113	2	21.5	200 M Malaysia
69	8	23	5.9	113	2	0.3	200 M Malaysia
70	8	22	41.1	113	1	39.1	200 M Malaysia
71	8	22	16.3	113	1	18.0	200 M Malaysia
72	8	21	51.4	113	0	57.0	200 M Malaysia
73	8	21	26.4	113	0	36.1	200 M Malaysia
74	8	21	1.4	113	0	15.2	200 M Malaysia
75	8	20	36.4	112	59	54.4	200 M Malaysia
76	8	20	11.2	112	59	33.6	200 M Malaysia
77	8	19	46.0	112	59	12.9	200 M Malaysia
78	8	19	20.8	112	58	52.3	200 M Malaysia
79	8	18	55.5	112	58	31.8	200 M Malaysia
80	8	18	30.2	112	58	11.3	200 M Malaysia
81	8	18	4.8	112	57	50.9	200 M Malaysia
82	8	17	39.3	112	57	30.6	200 M Malaysia
83	8	17	13.8	112	57	10.3	200 M Malaysia
84	8	16	48.2	112	56	50.1	200 M Malaysia
85	8	16	22.6	112	56	30.0	200 M Malaysia
86	8	15	56.9	112	56	10.0	200 M Malaysia
87	8	15	31.2	112	55	50.0	200 M Malaysia
88	8	15	5.4	112	55	30.1	200 M Malaysia
89	8	14	39.6	112	55	10.2	200 M Malaysia
90	8	14	13.7	112	54	50.4	200 M Malaysia
91	8	13	47.7	112	54	30.8	200 M Malaysia
92	8	13	21.7	112	54	11.1	200 M Malaysia
93	8	12	55.7	112	53	51.6	200 M Malaysia
94	8	12	29.6	112	53	32.1	200 M Malaysia
95	8	12	3.4	112	53	12.7	200 M Malaysia

96	8	11	37.2	112	52	53.3	200 M Malaysia
97	8	11	10.9	112	52	34.0	200 M Malaysia
98	8	10	44.6	112	52	14.8	200 M Malaysia
99	8	10	18.3	112	51	55.7	200 M Malaysia
100	8	9	51.8	112	51	36.7	200 M Malaysia
101	8	9	25.4	112	51	17.7	200 M Malaysia
102	8	8	58.9	112	50	58.8	200 M Malaysia
103	8	8	32.3	112	50	39.9	200 M Malaysia
104	8	8	5.7	112	50	21.2	200 M Malaysia
105	8	7	39.0	112	50	2.5	200 M Malaysia
106	8	7	12.3	112	49	43.9	200 M Malaysia
107	8	6	45.5	112	49	25.3	200 M Malaysia
108	8	6	18.7	112	49	6.8	200 M Malaysia
109	8	5	51.8	112	48	48.4	200 M Malaysia
110	8	5	24.9	112	48	30.1	200 M Malaysia
111	8	4	57.9	112	48	11.9	200 M Malaysia
112	8	4	30.9	112	47	53.7	200 M Malaysia
113	8	4	3.8	112	47	35.6	200 M Malaysia
114	8	3	36.7	112	47	17.5	200 M Malaysia
115	8	3	9.5	112	46	59.6	200 M Malaysia
116	8	2	42.3	112	46	41.7	200 M Malaysia
117	8	2	15.1	112	46	23.9	200 M Malaysia
118	8	1	47.7	112	46	6.1	200 M Malaysia
119	8	1	20.4	112	45	48.5	200 M Malaysia
120	8	0	53.0	112	45	30.9	200 M Malaysia
121	8	0	25.5	112	45	13.4	200 M Malaysia
122	7	59	58.0	112	44	55.9	200 M Malaysia
123	7	59	30.5	112	44	38.6	200 M Malaysia
124	7	59	2.9	112	44	21.3	200 M Malaysia
125	7	58	35.3	112	44	4.1	200 M Malaysia
126	7	58	7.6	112	43	47.0	200 M Malaysia
127	7	57	39.8	112	43	29.9	200 M Malaysia
128	7	57	12.1	112	43	12.9	200 M Malaysia
129	7	56	44.2	112	42	56.0	200 M Malaysia
130	7	56	16.4	112	42	39.2	200 M Malaysia
131	7	55	48.4	112	42	22.4	200 M Malaysia
132	7	55	20.5	112	42	5.7	200 M Malaysia
133	7	54	52.5	112	41	49.1	200 M Malaysia
134	7	54	24.4	112	41	32.6	200 M Malaysia
135	7	53	56.3	112	41	16.1	200 M Malaysia
136	7	53	28.2	112	40	59.8	200 M Malaysia
137	7	52	60.0	112	40	43.5	200 M Malaysia
138	7	52	31.8	112	40	27.3	200 M Malaysia
139	7	52	3.5	112	40	11.1	200 M Malaysia
140	7	51	35.2	112	39	55.0	200 M Malaysia
141	7	51	6.8	112	39	39.1	200 M Malaysia
142	7	50	38.4	112	39	23.1	200 M Malaysia
143	7	50	10.0	112	39	7.3	200 M Malaysia
144	7	49	41.5	112	38	51.5	200 M Malaysia
145	7	49	13.0	112	38	35.9	200 M Malaysia
146	7	48	44.4	112	38	20.3	200 M Malaysia
147	7	48	15.8	112	38	4.7	200 M Malaysia
148	7	47	47.1	112	37	49.3	200 M Malaysia

149	7	47	18.4	112	37	33.9	200 M Malaysia
150	7	46	49.7	112	37	18.6	200 M Malaysia
151	7	46	20.9	112	37	3.4	200 M Malaysia
152	7	45	52.1	112	36	48.3	200 M Malaysia
153	7	45	23.2	112	36	33.2	200 M Malaysia
154	7	44	54.3	112	36	18.3	200 M Malaysia
155	7	44	25.4	112	36	3.4	200 M Malaysia
156	7	43	56.4	112	35	48.5	200 M Malaysia
157	7	43	27.4	112	35	33.8	200 M Malaysia
158	7	42	58.3	112	35	19.1	200 M Malaysia
159	7	42	29.2	112	35	4.6	200 M Malaysia
160	7	42	0.1	112	34	50.1	200 M Malaysia
161	7	41	30.9	112	34	35.6	200 M Malaysia
162	7	41	1.7	112	34	21.3	200 M Malaysia
163	7	40	32.4	112	34	7.0	200 M Malaysia
164	7	40	3.1	112	33	52.8	200 M Malaysia
165	7	39	42.8	112	33	43.1	Point B : Intersection of two converging envelopes of arcs of Malaysia's 200 M limits
166	7	39	37.5	112	33	31.6	200 M Malaysia
167	7	39	23.9	112	33	2.0	200 M Malaysia
168	7	39	10.1	112	32	32.5	200 M Malaysia
169	7	38	56.3	112	32	3.0	200 M Malaysia
170	7	38	42.3	112	31	33.5	200 M Malaysia
171	7	38	28.3	112	31	4.0	200 M Malaysia
172	7	38	14.3	112	30	34.7	200 M Malaysia
173	7	38	0.1	112	30	5.3	200 M Malaysia
174	7	37	45.9	112	29	36.0	200 M Malaysia
175	7	37	31.5	112	29	6.7	200 M Malaysia
176	7	37	17.1	112	28	37.5	200 M Malaysia
177	7	37	2.7	112	28	8.3	200 M Malaysia
178	7	36	48.1	112	27	39.1	200 M Malaysia
179	7	36	33.5	112	27	10.0	200 M Malaysia
180	7	36	18.8	112	26	40.9	200 M Malaysia
181	7	36	4.0	112	26	11.9	200 M Malaysia
182	7	35	49.1	112	25	42.9	200 M Malaysia
183	7	35	34.2	112	25	13.9	200 M Malaysia
184	7	35	19.1	112	24	45.0	200 M Malaysia
185	7	35	4.0	112	24	16.1	200 M Malaysia
186	7	34	48.8	112	23	47.3	200 M Malaysia
187	7	34	33.6	112	23	18.5	200 M Malaysia
188	7	34	18.2	112	22	49.7	200 M Malaysia
189	7	34	2.8	112	22	21.0	200 M Malaysia
190	7	33	47.3	112	21	52.3	200 M Malaysia
191	7	33	31.7	112	21	23.7	200 M Malaysia
192	7	33	16.1	112	20	55.1	200 M Malaysia
193	7	33	0.4	112	20	26.6	200 M Malaysia
194	7	32	44.6	112	19	58.1	200 M Malaysia
195	7	32	28.7	112	19	29.7	200 M Malaysia
196	7	32	12.7	112	19	1.2	200 M Malaysia
197	7	31	56.7	112	18	32.9	200 M Malaysia
198	7	31	40.6	112	18	4.6	200 M Malaysia
199	7	31	24.4	112	17	36.3	200 M Malaysia

200	7	31	8.1	112	17	8.0	200 M Malaysia
201	7	30	51.8	112	16	39.9	200 M Malaysia
202	7	30	35.4	112	16	11.7	200 M Malaysia
203	7	30	18.9	112	15	43.6	200 M Malaysia
204	7	30	2.3	112	15	15.6	200 M Malaysia
205	7	29	45.6	112	14	47.6	200 M Malaysia
206	7	29	28.9	112	14	19.6	200 M Malaysia
207	7	29	12.1	112	13	51.7	200 M Malaysia
208	7	28	55.2	112	13	23.8	200 M Malaysia
209	7	28	38.3	112	12	56.0	200 M Malaysia
210	7	28	21.3	112	12	28.2	200 M Malaysia
211	7	28	4.2	112	12	0.5	200 M Malaysia
212	7	27	47.0	112	11	32.8	200 M Malaysia
213	7	27	29.7	112	11	5.2	200 M Malaysia
214	7	27	12.4	112	10	37.6	200 M Malaysia
215	7	26	55.0	112	10	10.0	200 M Malaysia
216	7	26	37.6	112	9	42.5	200 M Malaysia
217	7	26	20.0	112	9	15.1	200 M Malaysia
218	7	26	2.4	112	8	47.7	200 M Malaysia
219	7	25	44.7	112	8	20.3	200 M Malaysia
220	7	25	26.9	112	7	53.0	200 M Malaysia
221	7	25	9.1	112	7	25.8	200 M Malaysia
222	7	24	51.2	112	6	58.6	200 M Malaysia
223	7	24	33.2	112	6	31.4	200 M Malaysia
224	7	24	15.1	112	6	4.3	200 M Malaysia
225	7	23	57.0	112	5	37.3	200 M Malaysia
226	7	23	38.7	112	5	10.3	200 M Malaysia
227	7	23	20.5	112	4	43.3	200 M Malaysia
228	7	23	2.1	112	4	16.4	200 M Malaysia
229	7	22	43.7	112	3	49.5	200 M Malaysia
230	7	22	25.2	112	3	22.7	200 M Malaysia
231	7	22	6.6	112	2	56.0	200 M Malaysia
232	7	21	47.9	112	2	29.3	200 M Malaysia
233	7	21	29.2	112	2	2.6	200 M Malaysia
234	7	21	10.4	112	1	36.0	200 M Malaysia
235	7	20	51.6	112	1	9.5	200 M Malaysia
236	7	20	32.6	112	0	43.0	200 M Malaysia
237	7	20	13.6	112	0	16.5	200 M Malaysia
238	7	19	54.6	111	59	50.1	200 M Malaysia
239	7	19	35.4	111	59	23.8	200 M Malaysia
240	7	19	16.2	111	58	57.5	200 M Malaysia
241	7	18	56.9	111	58	31.3	200 M Malaysia
242	7	18	37.5	111	58	5.1	200 M Malaysia
243	7	18	18.1	111	57	39.0	200 M Malaysia
244	7	17	58.6	111	57	12.9	200 M Malaysia
245	7	17	39.0	111	56	46.8	200 M Malaysia
246	7	17	19.4	111	56	20.9	200 M Malaysia
247	7	16	59.7	111	55	55.0	200 M Malaysia
248	7	16	39.9	111	55	29.1	200 M Malaysia
249	7	16	20.0	111	55	3.3	200 M Malaysia
250	7	16	0.1	111	54	37.5	200 M Malaysia
251	7	15	40.1	111	54	11.8	200 M Malaysia
252	7	15	20.0	111	53	46.2	200 M Malaysia

253	7	14	59.9	111	53	20.6	200 M Malaysia
254	7	14	39.7	111	52	55.1	200 M Malaysia
255	7	14	19.4	111	52	29.6	200 M Malaysia
256	7	13	59.1	111	52	4.2	200 M Malaysia
257	7	13	38.7	111	51	38.8	200 M Malaysia
258	7	13	18.2	111	51	13.5	200 M Malaysia
259	7	12	57.6	111	50	48.2	200 M Malaysia
260	7	12	37.0	111	50	23.0	200 M Malaysia
261	7	12	16.3	111	49	57.9	200 M Malaysia
262	7	11	55.6	111	49	32.8	200 M Malaysia
263	7	11	34.8	111	49	7.7	200 M Malaysia
264	7	11	13.9	111	48	42.8	200 M Malaysia
265	7	10	52.9	111	48	17.8	200 M Malaysia
266	7	10	31.9	111	47	53.0	200 M Malaysia
267	7	10	10.8	111	47	28.2	200 M Malaysia
268	7	9	49.7	111	47	3.4	200 M Malaysia
269	7	9	28.4	111	46	38.7	200 M Malaysia
270	7	9	7.1	111	46	14.1	200 M Malaysia
271	7	8	45.8	111	45	49.5	200 M Malaysia
272	7	8	24.4	111	45	25.0	200 M Malaysia
273	7	8	2.9	111	45	0.6	200 M Malaysia
274	7	7	50.2	111	44	46.2	200 M Malaysia
275	7	7	41.3	111	44	36.2	200 M Malaysia
276	7	7	19.7	111	44	11.8	200 M Malaysia
277	7	6	58.0	111	43	47.6	200 M Malaysia
278	7	6	36.3	111	43	23.3	200 M Malaysia
279	7	6	14.4	111	42	59.2	200 M Malaysia
280	7	5	52.6	111	42	35.1	200 M Malaysia
281	7	5	30.6	111	42	11.0	200 M Malaysia
282	7	5	8.6	111	41	47.1	200 M Malaysia
283	7	4	46.5	111	41	23.1	200 M Malaysia
284	7	4	24.4	111	40	59.3	200 M Malaysia
285	7	4	2.2	111	40	35.5	200 M Malaysia
286	7	3	39.9	111	40	11.7	200 M Malaysia
287	7	3	17.5	111	39	48.1	200 M Malaysia
288	7	2	55.2	111	39	24.5	200 M Malaysia
289	7	2	32.7	111	39	0.9	200 M Malaysia
290	7	2	10.2	111	38	37.4	200 M Malaysia
291	7	1	47.6	111	38	14.0	200 M Malaysia
292	7	1	24.9	111	37	50.6	200 M Malaysia
293	7	1	2.2	111	37	27.3	200 M Malaysia
294	7	0	39.4	111	37	4.0	200 M Malaysia
295	7	0	16.6	111	36	40.9	200 M Malaysia
296	6	59	53.7	111	36	17.7	200 M Malaysia
297	6	59	30.7	111	35	54.7	200 M Malaysia
298	6	59	7.7	111	35	31.7	200 M Malaysia
299	6	58	44.6	111	35	8.7	200 M Malaysia
300	6	58	21.4	111	34	45.9	200 M Malaysia
301	6	57	58.2	111	34	23.1	200 M Malaysia
302	6	57	34.9	111	34	0.3	200 M Malaysia
303	6	57	11.6	111	33	37.6	200 M Malaysia
304	6	56	48.2	111	33	15.0	200 M Malaysia
305	6	56	24.7	111	32	52.5	200 M Malaysia

306	6	56	1.2	111	32	30.0	200 M Malaysia
307	6	55	37.6	111	32	7.5	200 M Malaysia
308	6	55	14.0	111	31	45.2	200 M Malaysia
309	6	54	50.2	111	31	22.9	200 M Malaysia
310	6	54	26.5	111	31	0.6	200 M Malaysia
311	6	54	2.7	111	30	38.5	200 M Malaysia
312	6	53	41.8	111	30	19.2	200 M Malaysia
313	6	53	17.9	111	29	57.1	200 M Malaysia
314	6	52	54.1	111	29	35.1	200 M Malaysia
315	6	52	40.8	111	29	22.8	200 M Malaysia
316	6	52	37.9	111	29	20.2	200 M Malaysia
317	6	52	14.0	111	28	58.2	200 M Malaysia
318	6	51	50.0	111	28	36.2	200 M Malaysia
319	6	51	25.9	111	28	14.3	200 M Malaysia
320	6	51	1.8	111	27	52.4	200 M Malaysia
321	6	50	37.6	111	27	30.7	200 M Malaysia
322	6	50	13.4	111	27	8.9	200 M Malaysia
323	6	49	49.1	111	26	47.3	200 M Malaysia
324	6	49	24.7	111	26	25.7	200 M Malaysia
325	6	49	0.3	111	26	4.2	200 M Malaysia
326	6	48	35.8	111	25	42.8	200 M Malaysia
327	6	48	11.3	111	25	21.4	200 M Malaysia
328	6	47	46.7	111	25	0.1	200 M Malaysia
329	6	47	22.0	111	24	38.8	200 M Malaysia
330	6	46	57.3	111	24	17.7	200 M Malaysia
331	6	46	32.6	111	23	56.5	200 M Malaysia
332	6	46	7.8	111	23	35.5	200 M Malaysia
333	6	45	42.9	111	23	14.5	200 M Malaysia
334	6	45	17.9	111	22	53.6	200 M Malaysia
335	6	44	53.0	111	22	32.8	200 M Malaysia
336	6	44	27.9	111	22	12.0	200 M Malaysia
337	6	44	2.8	111	21	51.3	200 M Malaysia
338	6	43	37.6	111	21	30.7	200 M Malaysia
339	6	43	12.4	111	21	10.1	200 M Malaysia
340	6	42	47.2	111	20	49.6	200 M Malaysia
341	6	42	21.8	111	20	29.2	200 M Malaysia
342	6	41	56.5	111	20	8.8	200 M Malaysia
343	6	41	31.0	111	19	48.5	200 M Malaysia
344	6	41	5.5	111	19	28.3	200 M Malaysia
345	6	40	40.0	111	19	8.2	200 M Malaysia
346	6	40	14.4	111	18	48.1	200 M Malaysia
347	6	39	48.7	111	18	28.1	200 M Malaysia
348	6	39	23.0	111	18	8.1	200 M Malaysia
349	6	38	57.3	111	17	48.3	200 M Malaysia
350	6	38	31.4	111	17	28.5	200 M Malaysia
351	6	38	5.6	111	17	8.7	200 M Malaysia
352	6	37	39.7	111	16	49.1	200 M Malaysia
353	6	37	13.7	111	16	29.5	200 M Malaysia
354	6	36	47.7	111	16	9.9	200 M Malaysia
355	6	36	21.6	111	15	50.5	200 M Malaysia
356	6	35	55.4	111	15	31.1	200 M Malaysia
357	6	35	29.3	111	15	11.8	200 M Malaysia
358	6	35	3.0	111	14	52.6	200 M Malaysia

359	6	34	36.7	111	14	33.4	200 M Malaysia
360	6	34	10.4	111	14	14.3	200 M Malaysia
361	6	33	44.0	111	13	55.3	200 M Malaysia
362	6	33	17.5	111	13	36.3	200 M Malaysia
363	6	32	51.1	111	13	17.5	200 M Malaysia
364	6	32	24.5	111	12	58.6	200 M Malaysia
365	6	31	57.9	111	12	39.9	200 M Malaysia
366	6	31	31.3	111	12	21.3	200 M Malaysia
367	6	31	4.6	111	12	2.7	200 M Malaysia
368	6	30	37.8	111	11	44.1	200 M Malaysia
369	6	30	11.0	111	11	25.7	200 M Malaysia
370	6	29	44.2	111	11	7.3	200 M Malaysia
371	6	29	17.3	111	10	49.0	200 M Malaysia
372	6	28	50.3	111	10	30.8	200 M Malaysia
373	6	28	23.3	111	10	12.6	200 M Malaysia
374	6	27	56.3	111	9	54.6	200 M Malaysia
375	6	27	29.2	111	9	36.6	200 M Malaysia
376	6	27	2.0	111	9	18.6	200 M Malaysia
377	6	26	34.8	111	9	0.8	200 M Malaysia
378	6	26	18.9	111	8	50.3	200 M Malaysia
379	6	18	55.1	111	4	0.8	200 M Malaysia
380	6	14	59.8	111	1	27.3	Point C : Intersection of two converging envelopes of arcs of Malaysia's 200 M limits
381	6	13	48.5	110	57	17.9	200 M Malaysia
382	6	10	42.2	110	46	26.2	200 M Malaysia
383	6	7	35.7	110	35	34.6	200 M Malaysia
384	6	4	29.2	110	24	43.1	200 M Malaysia
385	6	4	24.5	110	24	26.9	200 M Malaysia
386	6	4	15.5	110	23	55.7	200 M Malaysia
387	6	4	6.3	110	23	24.5	200 M Malaysia
388	6	3	57.1	110	22	53.3	200 M Malaysia
389	6	3	47.8	110	22	22.1	200 M Malaysia
390	6	3	38.5	110	21	51.0	200 M Malaysia
391	6	3	29.0	110	21	19.9	200 M Malaysia
392	6	3	19.5	110	20	48.8	200 M Malaysia
393	6	3	9.8	110	20	17.8	200 M Malaysia
394	6	3	0.1	110	19	46.8	200 M Malaysia
395	6	2	50.3	110	19	15.8	200 M Malaysia
396	6	2	40.4	110	18	44.8	200 M Malaysia
397	6	2	30.5	110	18	13.9	200 M Malaysia
398	6	2	20.4	110	17	43.0	200 M Malaysia
399	6	2	10.3	110	17	12.1	200 M Malaysia
400	6	2	0.1	110	16	41.2	200 M Malaysia
401	6	1	49.8	110	16	10.4	200 M Malaysia
402	6	1	39.4	110	15	39.6	200 M Malaysia
403	6	1	28.9	110	15	8.8	200 M Malaysia
404	6	1	18.4	110	14	38.1	200 M Malaysia
405	6	1	7.7	110	14	7.4	200 M Malaysia
406	6	0	57.0	110	13	36.7	200 M Malaysia
407	6	0	46.2	110	13	6.0	200 M Malaysia
408	6	0	35.3	110	12	35.4	200 M Malaysia
409	6	0	24.4	110	12	4.8	200 M Malaysia

410	6	0	13.3	110	11	34.3	200 M Malaysia
411	6	0	2.2	110	11	3.7	200 M Malaysia
412	5	59	51.0	110	10	33.2	200 M Malaysia
413	5	59	39.7	110	10	2.7	200 M Malaysia
414	5	59	28.3	110	9	32.3	200 M Malaysia
415	5	59	16.8	110	9	1.9	200 M Malaysia
416	5	59	5.3	110	8	31.5	200 M Malaysia
417	5	58	53.6	110	8	1.1	200 M Malaysia
418	5	58	41.9	110	7	30.8	200 M Malaysia
419	5	58	30.1	110	7	0.5	200 M Malaysia
420	5	58	18.3	110	6	30.3	200 M Malaysia
421	5	58	6.3	110	6	0.1	200 M Malaysia
422	5	57	54.3	110	5	29.9	200 M Malaysia
423	5	57	42.1	110	4	59.7	200 M Malaysia
424	5	57	29.9	110	4	29.6	200 M Malaysia
425	5	57	17.7	110	3	59.5	200 M Malaysia
426	5	57	5.3	110	3	29.5	200 M Malaysia
427	5	56	52.8	110	2	59.4	200 M Malaysia
428	5	56	40.3	110	2	29.4	200 M Malaysia
429	5	56	29.7	110	2	4.2	200 M Malaysia
430	5	56	27.7	110	1	59.5	200 M Malaysia
431	5	56	15.0	110	1	29.6	200 M Malaysia
432	5	56	2.2	110	0	59.7	200 M Malaysia
433	5	55	49.4	110	0	29.8	200 M Malaysia
434	5	55	36.4	110	0	0.0	200 M Malaysia
435	5	55	23.4	109	59	30.2	200 M Malaysia
436	5	55	10.3	109	59	0.5	200 M Malaysia
437	5	54	57.2	109	58	30.8	200 M Malaysia
438	5	54	43.9	109	58	1.1	200 M Malaysia
439	5	54	30.6	109	57	31.5	200 M Malaysia
440	5	54	17.1	109	57	1.9	200 M Malaysia
441	5	54	3.6	109	56	32.3	200 M Malaysia
442	5	53	50.1	109	56	2.8	200 M Malaysia
443	5	53	36.4	109	55	33.3	200 M Malaysia
444	5	53	22.7	109	55	3.8	200 M Malaysia
445	5	53	8.8	109	54	34.4	200 M Malaysia
446	5	52	54.9	109	54	5.1	200 M Malaysia
447	5	52	41.0	109	53	35.7	200 M Malaysia
448	5	52	26.9	109	53	6.4	200 M Malaysia
449	5	52	12.8	109	52	37.1	200 M Malaysia
450	5	51	58.5	109	52	7.9	200 M Malaysia
451	5	51	44.2	109	51	38.7	200 M Malaysia
452	5	51	29.9	109	51	9.6	200 M Malaysia
453	5	51	15.4	109	50	40.5	200 M Malaysia
454	5	51	10.9	109	50	31.5	200 M Malaysia
455	5	51	9.7	109	50	29.2	Point D : Intersection of Malaysia's 200 M limit and the boundary line under the Agreement between the Government of Malaysia and the Government of the Republic of Indonesia relating to the delimitation of the Continental Shelves between the two countries, 27th October 1969

456	6	18	11.0	109	38	45.0	Point E : Point 25 of the Agreement between the Government of Malaysia and the Government of the Republic of Indonesia relating to the delimitation of the Continental Shelves between the two countries, 27th October 1969
457	6	18	12.0	109	38	36.0	Point F : Point 25 of the Agreement between the Government of the Socialist Republic of Vietnam and the Government of the Republic of Indonesia concerning the delimitation of the Continental Shelf Boundary, 26th June 2003
458	6	24	55.7	109	34	6.7	Point G : Intersection of Vietnam's 200 M limit and the boundary line under the Agreement between the Government of Socialist Republic of Vietnam and the Government of the Republic of Indonesia concerning the delimitation of the Continental Shelf Boundary, 26th June 2003
459	6	30	50.7	109	44	55.2	200 M of Vietnam
460	6	38	36.2	109	59	7.1	200 M of Vietnam
461	6	46	21.0	110	13	19.6	200 M of Vietnam
462	6	54	5.2	110	27	32.6	200 M of Vietnam
463	7	1	48.8	110	41	46.2	200 M of Vietnam
464	7	2	2.2	110	42	10.9	200 M of Vietnam
465	7	2	17.8	110	42	39.4	200 M of Vietnam
466	7	2	33.5	110	43	7.9	200 M of Vietnam
467	7	2	49.3	110	43	36.4	200 M of Vietnam
468	7	3	5.1	110	44	4.9	200 M of Vietnam
469	7	3	21.1	110	44	33.2	200 M of Vietnam
470	7	3	37.1	110	45	1.6	200 M of Vietnam
471	7	3	53.2	110	45	29.9	200 M of Vietnam
472	7	4	9.3	110	45	58.2	200 M of Vietnam
473	7	4	25.6	110	46	26.4	200 M of Vietnam
474	7	4	41.9	110	46	54.6	200 M of Vietnam
475	7	4	58.3	110	47	22.7	200 M of Vietnam
476	7	5	14.7	110	47	50.8	200 M of Vietnam
477	7	5	31.3	110	48	18.8	200 M of Vietnam
478	7	5	47.9	110	48	46.8	200 M of Vietnam
479	7	6	4.6	110	49	14.8	200 M of Vietnam
480	7	6	21.3	110	49	42.7	200 M of Vietnam
481	7	6	38.2	110	50	10.6	200 M of Vietnam
482	7	6	55.1	110	50	38.4	200 M of Vietnam
483	7	7	12.1	110	51	6.2	200 M of Vietnam
484	7	7	29.1	110	51	33.9	200 M of Vietnam
485	7	7	46.3	110	52	1.6	200 M of Vietnam
486	7	8	3.5	110	52	29.3	200 M of Vietnam
487	7	8	20.7	110	52	56.9	200 M of Vietnam
488	7	8	38.1	110	53	24.4	200 M of Vietnam
489	7	8	55.5	110	53	51.9	200 M of Vietnam

490	7	9	13.0	110	54	19.4	200 M of Vietnam
491	7	9	30.6	110	54	46.8	200 M of Vietnam
492	7	9	48.3	110	55	14.1	200 M of Vietnam
493	7	10	6.0	110	55	41.5	200 M of Vietnam
494	7	10	23.8	110	56	8.7	200 M of Vietnam
495	7	10	41.6	110	56	36.0	200 M of Vietnam
496	7	10	59.6	110	57	3.1	200 M of Vietnam
497	7	11	17.6	110	57	30.3	200 M of Vietnam
498	7	11	35.7	110	57	57.3	200 M of Vietnam
499	7	11	53.8	110	58	24.4	200 M of Vietnam
500	7	12	12.1	110	58	51.3	200 M of Vietnam
501	7	12	30.4	110	59	18.3	200 M of Vietnam
502	7	12	48.7	110	59	45.2	200 M of Vietnam
503	7	13	7.2	111	0	12.0	200 M of Vietnam
504	7	13	25.7	111	0	38.8	200 M of Vietnam
505	7	13	44.3	111	1	5.5	200 M of Vietnam
506	7	14	3.0	111	1	32.2	200 M of Vietnam
507	7	14	21.7	111	1	58.8	200 M of Vietnam
508	7	14	40.5	111	2	25.4	200 M of Vietnam
509	7	14	59.4	111	2	52.0	200 M of Vietnam
510	7	15	18.3	111	3	18.4	200 M of Vietnam
511	7	15	37.3	111	3	44.9	200 M of Vietnam
512	7	15	56.4	111	4	11.3	200 M of Vietnam
513	7	16	15.6	111	4	37.6	200 M of Vietnam
514	7	16	34.8	111	5	3.9	200 M of Vietnam
515	7	16	54.1	111	5	30.1	200 M of Vietnam
516	7	17	13.5	111	5	56.3	200 M of Vietnam
517	7	17	32.9	111	6	22.4	200 M of Vietnam
518	7	17	52.4	111	6	48.5	200 M of Vietnam
519	7	18	12.0	111	7	14.5	200 M of Vietnam
520	7	18	31.6	111	7	40.5	200 M of Vietnam
521	7	18	51.4	111	8	6.4	200 M of Vietnam
522	7	19	11.1	111	8	32.3	200 M of Vietnam
523	7	19	31.0	111	8	58.1	200 M of Vietnam
524	7	19	50.9	111	9	23.8	200 M of Vietnam
525	7	20	10.9	111	9	49.6	200 M of Vietnam
526	7	20	31.0	111	10	15.2	200 M of Vietnam
527	7	20	51.1	111	10	40.8	200 M of Vietnam
528	7	21	11.3	111	11	6.4	200 M of Vietnam
529	7	21	31.6	111	11	31.8	200 M of Vietnam
530	7	21	51.9	111	11	57.3	200 M of Vietnam
531	7	22	12.3	111	12	22.7	200 M of Vietnam
532	7	22	32.8	111	12	48.0	200 M of Vietnam
533	7	22	53.3	111	13	13.3	200 M of Vietnam
534	7	23	13.9	111	13	38.5	200 M of Vietnam
535	7	23	34.6	111	14	3.7	200 M of Vietnam
536	7	23	55.3	111	14	28.8	200 M of Vietnam
537	7	24	16.1	111	14	53.8	200 M of Vietnam
538	7	24	37.0	111	15	18.8	200 M of Vietnam
539	7	24	58.0	111	15	43.8	200 M of Vietnam
540	7	25	19.0	111	16	8.6	200 M of Vietnam
541	7	25	40.0	111	16	33.5	200 M of Vietnam
542	7	26	1.2	111	16	58.2	200 M of Vietnam

543	7	26	22.4	111	17	23.0	200 M of Vietnam
544	7	26	43.7	111	17	47.6	200 M of Vietnam
545	7	27	5.0	111	18	12.2	200 M of Vietnam
546	7	27	26.4	111	18	36.8	200 M of Vietnam
547	7	27	47.9	111	19	1.3	200 M of Vietnam
548	7	28	9.4	111	19	25.7	200 M of Vietnam
549	7	28	31.0	111	19	50.1	200 M of Vietnam
550	7	28	52.7	111	20	14.4	200 M of Vietnam
551	7	29	14.4	111	20	38.6	200 M of Vietnam
552	7	29	36.2	111	21	2.8	200 M of Vietnam
553	7	29	58.1	111	21	27.0	200 M of Vietnam
554	7	30	20.0	111	21	51.1	200 M of Vietnam
555	7	30	42.0	111	22	15.1	200 M of Vietnam
556	7	31	4.0	111	22	39.1	200 M of Vietnam
557	7	31	26.2	111	23	3.0	200 M of Vietnam
558	7	31	48.3	111	23	26.8	200 M of Vietnam
559	7	32	10.6	111	23	50.6	200 M of Vietnam
560	7	32	32.9	111	24	14.3	200 M of Vietnam
561	7	32	55.3	111	24	38.0	200 M of Vietnam
562	7	33	17.7	111	25	1.6	200 M of Vietnam
563	7	33	40.2	111	25	25.2	200 M of Vietnam
564	7	34	2.8	111	25	48.7	200 M of Vietnam
565	7	34	25.4	111	26	12.1	200 M of Vietnam
566	7	34	48.1	111	26	35.5	200 M of Vietnam
567	7	35	10.8	111	26	58.8	200 M of Vietnam
568	7	35	33.6	111	27	22.0	200 M of Vietnam
569	7	35	56.5	111	27	45.2	200 M of Vietnam
570	7	36	19.4	111	28	8.3	200 M of Vietnam
571	7	36	42.4	111	28	31.4	200 M of Vietnam
572	7	37	5.5	111	28	54.4	200 M of Vietnam
573	7	37	28.6	111	29	17.3	200 M of Vietnam
574	7	37	51.8	111	29	40.2	200 M of Vietnam
575	7	38	15.0	111	30	3.0	200 M of Vietnam
576	7	38	38.3	111	30	25.8	200 M of Vietnam
577	7	39	1.7	111	30	48.5	200 M of Vietnam
578	7	39	25.1	111	31	11.1	200 M of Vietnam
579	7	39	48.6	111	31	33.7	200 M of Vietnam
580	7	40	12.1	111	31	56.2	200 M of Vietnam
581	7	40	35.7	111	32	18.6	200 M of Vietnam
582	7	40	59.4	111	32	41.0	200 M of Vietnam
583	7	41	23.1	111	33	3.3	200 M of Vietnam
584	7	41	46.9	111	33	25.6	200 M of Vietnam
585	7	41	59.6	111	33	37.3	Point H : The point of the envelope of arcs of Vietnam's 200 M limits
586	7	42	10.8	111	33	47.7	200 M of Vietnam
587	7	42	34.7	111	34	9.9	200 M of Vietnam
588	7	42	58.6	111	34	31.9	200 M of Vietnam
589	7	43	22.7	111	34	53.9	200 M of Vietnam
590	7	43	46.7	111	35	15.9	200 M of Vietnam
591	7	44	10.9	111	35	37.7	200 M of Vietnam
592	7	44	35.1	111	35	59.5	200 M of Vietnam
593	7	44	59.3	111	36	21.3	200 M of Vietnam
594	7	45	23.6	111	36	42.9	200 M of Vietnam

595	7	45	48.0	111	37	4.5	200 M of Vietnam
596	7	46	12.4	111	37	26.1	200 M of Vietnam
597	7	46	36.9	111	37	47.6	200 M of Vietnam
598	7	47	1.5	111	38	9.0	200 M of Vietnam
599	7	47	26.1	111	38	30.3	200 M of Vietnam
600	7	47	50.7	111	38	51.6	200 M of Vietnam
601	7	48	15.4	111	39	12.8	200 M of Vietnam
602	7	48	40.2	111	39	34.0	200 M of Vietnam
603	7	49	5.0	111	39	55.0	200 M of Vietnam
604	7	49	29.9	111	40	16.0	200 M of Vietnam
605	7	49	54.9	111	40	37.0	200 M of Vietnam
606	7	50	19.9	111	40	57.9	200 M of Vietnam
607	7	50	44.9	111	41	18.7	200 M of Vietnam
608	7	51	10.0	111	41	39.4	200 M of Vietnam
609	7	51	35.2	111	42	0.1	200 M of Vietnam
610	7	52	0.4	111	42	20.7	200 M of Vietnam
611	7	52	25.7	111	42	41.3	200 M of Vietnam
612	7	52	51.0	111	43	1.8	200 M of Vietnam
613	7	53	16.4	111	43	22.2	200 M of Vietnam
614	7	53	41.8	111	43	42.5	200 M of Vietnam
615	7	54	7.3	111	44	2.8	200 M of Vietnam
616	7	54	32.8	111	44	23.0	200 M of Vietnam
617	7	54	58.4	111	44	43.1	200 M of Vietnam
618	7	55	24.1	111	45	3.2	200 M of Vietnam
619	7	55	49.8	111	45	23.2	200 M of Vietnam
620	7	56	15.6	111	45	43.1	200 M of Vietnam
621	7	56	41.4	111	46	3.0	200 M of Vietnam
622	7	57	7.2	111	46	22.8	200 M of Vietnam
623	7	57	33.2	111	46	42.5	200 M of Vietnam
624	7	57	59.1	111	47	2.2	200 M of Vietnam
625	7	58	25.2	111	47	21.7	200 M of Vietnam
626	7	58	51.2	111	47	41.2	200 M of Vietnam
627	7	59	17.4	111	48	0.7	200 M of Vietnam
628	7	59	43.5	111	48	20.1	200 M of Vietnam
629	8	0	9.8	111	48	39.4	200 M of Vietnam
630	8	0	36.1	111	48	58.6	200 M of Vietnam
631	8	1	2.4	111	49	17.8	200 M of Vietnam
632	8	1	28.8	111	49	36.9	200 M of Vietnam
633	8	1	55.2	111	49	55.9	200 M of Vietnam
634	8	2	21.7	111	50	14.8	200 M of Vietnam
635	8	2	48.2	111	50	33.7	200 M of Vietnam
636	8	3	14.8	111	50	52.5	200 M of Vietnam
637	8	3	41.5	111	51	11.3	200 M of Vietnam
638	8	4	8.1	111	51	29.9	200 M of Vietnam
639	8	4	34.9	111	51	48.5	200 M of Vietnam
640	8	5	1.7	111	52	7.0	200 M of Vietnam
641	8	5	28.5	111	52	25.5	200 M of Vietnam
642	8	5	55.4	111	52	43.9	200 M of Vietnam
643	8	6	22.3	111	53	2.2	200 M of Vietnam
644	8	6	49.3	111	53	20.4	200 M of Vietnam
645	8	7	16.4	111	53	38.6	200 M of Vietnam
646	8	7	43.4	111	53	56.7	200 M of Vietnam
647	8	8	10.6	111	54	14.7	200 M of Vietnam

648	8	8	37.7	111	54	32.6	200 M of Vietnam
649	8	9	5.0	111	54	50.5	200 M of Vietnam
650	8	9	32.2	111	55	8.3	200 M of Vietnam
651	8	9	59.6	111	55	26.0	200 M of Vietnam
652	8	10	26.9	111	55	43.7	200 M of Vietnam
653	8	10	54.3	111	56	1.3	200 M of Vietnam
654	8	11	21.8	111	56	18.8	200 M of Vietnam
655	8	11	49.3	111	56	36.2	200 M of Vietnam
656	8	12	16.9	111	56	53.6	200 M of Vietnam
657	8	12	44.5	111	57	10.8	200 M of Vietnam
658	8	13	12.1	111	57	28.0	200 M of Vietnam
659	8	13	39.8	111	57	45.2	200 M of Vietnam
660	8	14	7.5	111	58	2.2	200 M of Vietnam
661	8	14	35.3	111	58	19.2	200 M of Vietnam
662	8	15	3.2	111	58	36.1	200 M of Vietnam
663	8	15	31.0	111	58	53.0	200 M of Vietnam
664	8	15	59.0	111	59	9.7	200 M of Vietnam
665	8	16	26.9	111	59	26.4	200 M of Vietnam
666	8	16	54.9	111	59	43.0	200 M of Vietnam
667	8	17	23.0	111	59	59.6	200 M of Vietnam
668	8	17	51.1	112	0	16.0	200 M of Vietnam
669	8	18	19.2	112	0	32.4	200 M of Vietnam
670	8	18	47.4	112	0	48.7	200 M of Vietnam
671	8	19	15.6	112	1	5.0	200 M of Vietnam
672	8	19	43.9	112	1	21.1	200 M of Vietnam
673	8	20	12.2	112	1	37.2	200 M of Vietnam
674	8	20	40.6	112	1	53.2	200 M of Vietnam
675	8	21	9.0	112	2	9.2	200 M of Vietnam
676	8	21	37.4	112	2	25.0	200 M of Vietnam
677	8	22	5.9	112	2	40.8	200 M of Vietnam
678	8	22	34.4	112	2	56.5	200 M of Vietnam
679	8	23	3.0	112	3	12.1	200 M of Vietnam
680	8	23	31.6	112	3	27.7	200 M of Vietnam
681	8	24	0.3	112	3	43.1	200 M of Vietnam
682	8	24	29.0	112	3	58.5	200 M of Vietnam
683	8	24	57.7	112	4	13.9	200 M of Vietnam
684	8	25	26.5	112	4	29.1	200 M of Vietnam
685	8	25	55.3	112	4	44.3	200 M of Vietnam
686	8	26	24.1	112	4	59.4	200 M of Vietnam
687	8	26	53.0	112	5	14.4	200 M of Vietnam
688	8	27	22.0	112	5	29.3	200 M of Vietnam
689	8	27	50.9	112	5	44.1	200 M of Vietnam
690	8	28	20.0	112	5	58.9	200 M of Vietnam
691	8	28	49.0	112	6	13.6	200 M of Vietnam
692	8	29	18.1	112	6	28.2	200 M of Vietnam
693	8	29	47.2	112	6	42.8	200 M of Vietnam
694	8	30	16.4	112	6	57.2	200 M of Vietnam
695	8	30	45.6	112	7	11.6	200 M of Vietnam
696	8	31	14.9	112	7	25.9	200 M of Vietnam
697	8	31	44.2	112	7	40.1	200 M of Vietnam
698	8	32	13.5	112	7	54.3	200 M of Vietnam
699	8	32	42.9	112	8	8.4	200 M of Vietnam
700	8	33	12.3	112	8	22.4	200 M of Vietnam

701	8	33	41.7	112	8	36.3	200 M of Vietnam
702	8	34	11.2	112	8	50.1	200 M of Vietnam
703	8	34	40.7	112	9	3.9	200 M of Vietnam
704	8	35	10.2	112	9	17.5	200 M of Vietnam
705	8	35	39.8	112	9	31.1	200 M of Vietnam
706	8	36	9.4	112	9	44.6	200 M of Vietnam
707	8	36	39.1	112	9	58.1	200 M of Vietnam
708	8	37	8.8	112	10	11.4	200 M of Vietnam
709	8	37	38.5	112	10	24.7	200 M of Vietnam
710	8	38	8.3	112	10	37.9	200 M of Vietnam
711	8	38	38.1	112	10	51.0	200 M of Vietnam
712	8	39	7.9	112	11	4.0	200 M of Vietnam
713	8	39	37.8	112	11	17.0	200 M of Vietnam
714	8	40	7.7	112	11	29.9	200 M of Vietnam
715	8	40	37.6	112	11	42.7	200 M of Vietnam
716	8	41	7.6	112	11	55.4	200 M of Vietnam
717	8	41	37.6	112	12	8.0	200 M of Vietnam
718	8	42	7.6	112	12	20.6	200 M of Vietnam
719	8	42	37.7	112	12	33.0	200 M of Vietnam
720	8	43	7.8	112	12	45.4	200 M of Vietnam
721	8	43	37.9	112	12	57.7	200 M of Vietnam
722	8	44	8.1	112	13	10.0	200 M of Vietnam
723	8	44	38.3	112	13	22.1	200 M of Vietnam
724	8	45	8.5	112	13	34.2	200 M of Vietnam
725	8	45	38.8	112	13	46.2	200 M of Vietnam
726	8	46	9.1	112	13	58.1	200 M of Vietnam
727	8	46	39.5	112	14	9.9	200 M of Vietnam
728	8	47	9.8	112	14	21.6	200 M of Vietnam
729	8	47	40.2	112	14	33.3	200 M of Vietnam
730	8	48	10.6	112	14	44.9	200 M of Vietnam
731	8	48	41.1	112	14	56.4	200 M of Vietnam
732	8	49	11.6	112	15	7.8	200 M of Vietnam
733	8	49	42.1	112	15	19.1	200 M of Vietnam
734	8	50	12.6	112	15	30.3	200 M of Vietnam
735	8	50	43.2	112	15	41.5	200 M of Vietnam
736	8	51	13.8	112	15	52.6	200 M of Vietnam
737	8	51	44.5	112	16	3.6	200 M of Vietnam
738	8	52	15.1	112	16	14.5	200 M of Vietnam
739	8	52	45.8	112	16	25.3	200 M of Vietnam
740	8	53	16.5	112	16	36.1	200 M of Vietnam
741	8	53	47.3	112	16	46.8	200 M of Vietnam
742	8	54	18.1	112	16	57.3	200 M of Vietnam
743	8	54	48.9	112	17	7.9	200 M of Vietnam
744	8	55	19.7	112	17	18.3	200 M of Vietnam
745	8	55	50.6	112	17	28.6	200 M of Vietnam
746	8	56	21.5	112	17	38.9	200 M of Vietnam
747	8	56	52.4	112	17	49.0	200 M of Vietnam
748	8	57	23.3	112	17	59.1	200 M of Vietnam
749	8	57	54.3	112	18	9.1	200 M of Vietnam
750	8	58	25.3	112	18	19.0	200 M of Vietnam
751	8	58	56.3	112	18	28.9	200 M of Vietnam
752	8	59	27.4	112	18	38.6	200 M of Vietnam
753	8	59	58.5	112	18	48.3	200 M of Vietnam

754	9	0	29.6	112	18	57.9	200 M of Vietnam
755	9	1	0.7	112	19	7.4	200 M of Vietnam
756	9	1	31.9	112	19	16.8	200 M of Vietnam
757	9	2	3.0	112	19	26.1	200 M of Vietnam
758	9	2	34.2	112	19	35.4	200 M of Vietnam
759	9	3	5.5	112	19	44.6	200 M of Vietnam
760	9	3	36.7	112	19	53.6	200 M of Vietnam
761	9	4	8.0	112	20	2.6	200 M of Vietnam
762	9	4	39.3	112	20	11.5	200 M of Vietnam
763	9	5	10.6	112	20	20.4	200 M of Vietnam
764	9	5	42.0	112	20	29.1	200 M of Vietnam
765	9	6	13.3	112	20	37.8	200 M of Vietnam
766	9	6	44.7	112	20	46.3	200 M of Vietnam
767	9	7	16.2	112	20	54.8	200 M of Vietnam
768	9	7	47.6	112	21	3.2	200 M of Vietnam
769	9	8	19.1	112	21	11.6	200 M of Vietnam
770	9	8	50.6	112	21	19.8	200 M of Vietnam
771	9	9	22.1	112	21	27.9	200 M of Vietnam
772	9	9	53.6	112	21	36.0	200 M of Vietnam
773	9	10	25.1	112	21	44.0	200 M of Vietnam
774	9	10	56.7	112	21	51.9	200 M of Vietnam
775	9	11	28.3	112	21	59.7	200 M of Vietnam
776	9	11	59.9	112	22	7.4	200 M of Vietnam
777	9	12	31.5	112	22	15.1	200 M of Vietnam
778	9	13	3.2	112	22	22.6	200 M of Vietnam
779	9	13	34.9	112	22	30.1	200 M of Vietnam
780	9	14	6.6	112	22	37.5	200 M of Vietnam
781	9	14	38.3	112	22	44.7	200 M of Vietnam
782	9	15	10.0	112	22	52.0	200 M of Vietnam
783	9	15	41.8	112	22	59.1	200 M of Vietnam
784	9	16	13.5	112	23	6.1	200 M of Vietnam
785	9	16	45.3	112	23	13.1	200 M of Vietnam
786	9	17	17.1	112	23	19.9	200 M of Vietnam
787	9	17	48.9	112	23	26.7	200 M of Vietnam
788	9	18	20.8	112	23	33.4	200 M of Vietnam
789	9	18	52.7	112	23	40.0	200 M of Vietnam
790	9	19	24.5	112	23	46.5	200 M of Vietnam
791	9	19	56.4	112	23	53.0	200 M of Vietnam
792	9	20	28.3	112	23	59.3	200 M of Vietnam
793	9	21	0.3	112	24	5.6	200 M of Vietnam
794	9	21	32.2	112	24	11.8	200 M of Vietnam
795	9	22	4.2	112	24	17.9	200 M of Vietnam
796	9	22	36.2	112	24	23.9	200 M of Vietnam
797	9	23	8.2	112	24	29.8	200 M of Vietnam
798	9	23	40.2	112	24	35.6	200 M of Vietnam
799	9	24	12.2	112	24	41.4	200 M of Vietnam
800	9	24	44.2	112	24	47.0	200 M of Vietnam
801	9	25	16.3	112	24	52.6	200 M of Vietnam
802	9	25	48.4	112	24	58.1	200 M of Vietnam
803	9	26	20.4	112	25	3.5	200 M of Vietnam
804	9	26	52.5	112	25	8.8	200 M of Vietnam
805	9	27	24.7	112	25	14.0	200 M of Vietnam
806	9	27	56.8	112	25	19.2	200 M of Vietnam

807	9	28	28.9	112	25	24.2	200 M of Vietnam
808	9	29	1.1	112	25	29.2	200 M of Vietnam
809	9	29	13.4	112	25	31.0	200 M of Vietnam
810	9	30	15.4	112	25	40.3	Point I : The point of the envelope of arcs of Vietnam's 200 M limits

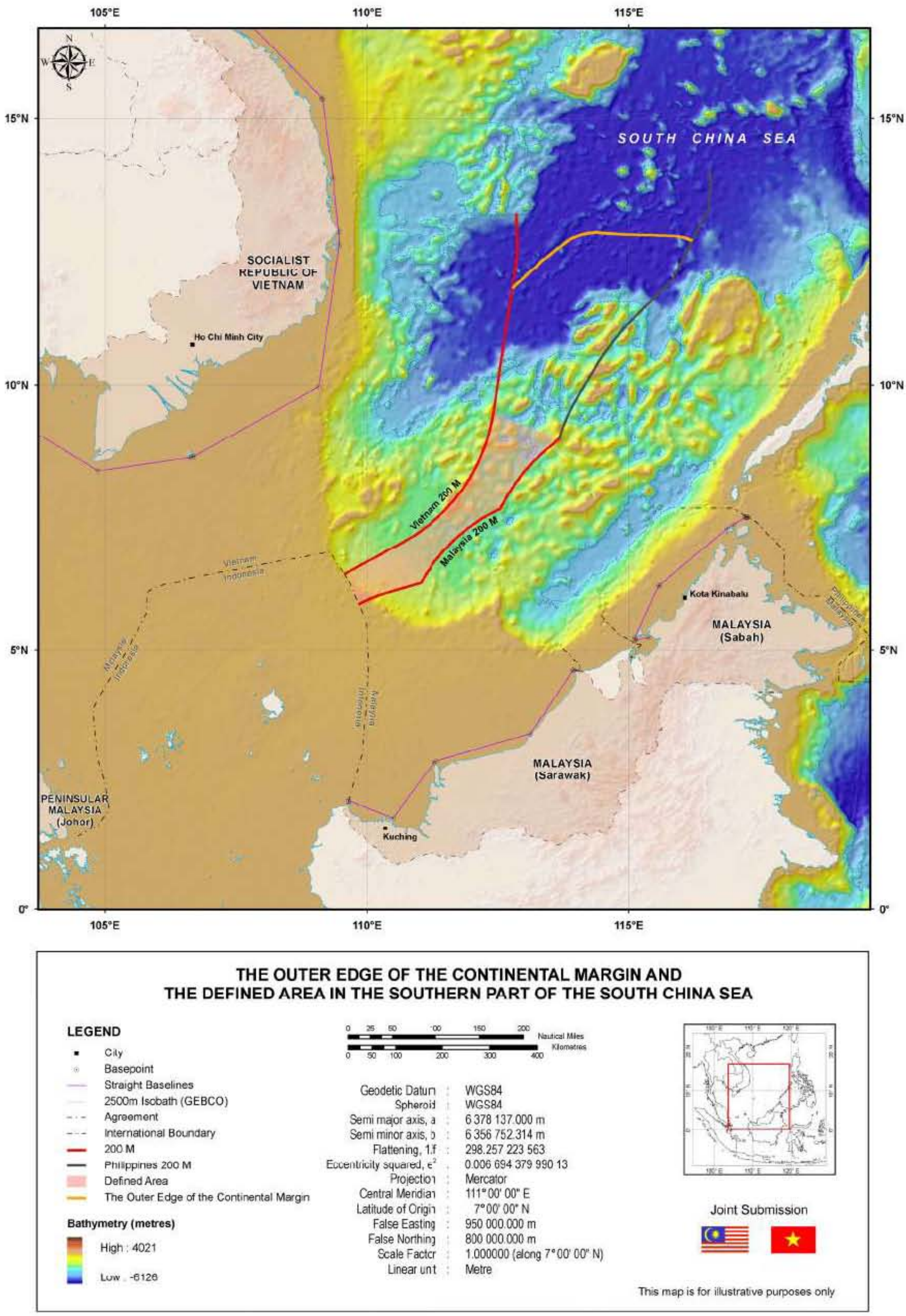

Figure 2 The Outer Edge of the Continental Margin and the Defined Area in the southern part of the South China Sea

Table 2

List of Geographical Coordinates of the Formula Fixed Points Used in the Establishment of the Outer Edge of the Continental Margin (OECM) (All Coordinates are in WGS84)

OECM Point ID	Latitude (N)			Longitude (E)			Method	From OECM Point	To OECM Point	Distance	
	°	'	"	°	'	"				KM	M
1	11	49	51.8	112	47	13.0	Intersection of Vietnam 200 M & 60 M envelope of arcs generated from FOS07				
2	12	20	35.6	113	21	8.8	Formula fixed point of 60 M envelope of arcs generated from FOS04	1	2	83.667	45.18
3	12	21	15.7	113	21	54.6	Formula fixed point of 60 M envelope of arcs generated from FOS04	2	3	1.852	1.00
4	12	21	55.0	113	22	41.1	Formula fixed point of 60 M envelope of arcs generated from FOS04	3	4	1.852	1.00
5	12	22	33.6	113	23	28.2	Formula fixed point of 60 M envelope of arcs generated from FOS04	4	5	1.852	1.00
6	12	23	11.3	113	24	16.0	Formula fixed point of 60 M envelope of arcs generated from FOS04	5	6	1.852	1.00
7	12	23	48.3	113	25	4.4	Formula fixed point of 60 M envelope of arcs generated from FOS04	6	7	1.852	1.00
8	12	39	56.9	113	46	22.5	Formula fixed point of 60 M envelope of arcs generated from FOS03	7	8	48.733	26.32
9	12	40	33.0	113	47	11.6	Formula fixed point of 60 M envelope of arcs generated from FOS03	8	9	1.852	1.00
10	12	41	8.4	113	48	1.3	Formula fixed point of 60 M envelope of arcs generated from FOS03	9	10	1.852	1.00
11	12	41	42.9	113	48	51.6	Formula fixed point of 60 M envelope of arcs generated from FOS03	10	11	1.852	1.00
12	12	42	16.6	113	49	42.5	Formula fixed point of 60 M envelope of arcs generated from FOS03	11	12	1.852	1.00
13	12	42	49.5	113	50	33.9	Formula fixed point of 60 M envelope of arcs generated from FOS03	12	13	1.852	1.00
14	12	43	21.5	113	51	25.9	Formula fixed point of 60 M envelope of arcs generated from FOS03	13	14	1.852	1.00
15	12	43	52.7	113	52	18.5	Formula fixed point of 60 M envelope of arcs generated from FOS03	14	15	1.852	1.00
16	12	44	23.0	113	53	11.6	Formula fixed point of 60 M envelope of arcs generated from FOS03	15	16	1.852	1.00
17	12	44	52.4	113	54	5.1	Formula fixed point of 60 M envelope of arcs generated from FOS03	16	17	1.852	1.00
18	12	45	20.9	113	54	59.2	Formula fixed point of 60 M envelope of arcs generated from FOS03	17	18	1.852	1.00

OECM Point ID	Latitude (N)			Longitude (E)			Method	From OECM Point	To OECM Point	Distance	
	°	'	"	°	'	"				KM	M
19	12	45	48.6	113	55	53.8	Formula fixed point of 60 M envelope of arcs generated from FOS03	18	19	1.852	1.00
20	12	46	15.3	113	56	48.8	Formula fixed point of 60 M envelope of arcs generated from FOS03	19	20	1.852	1.00
21	12	46	41.2	113	57	44.2	Formula fixed point of 60 M envelope of arcs generated from FOS03	20	21	1.852	1.00
22	12	47	6.1	113	58	40.1	Formula fixed point of 60 M envelope of arcs generated from FOS03	21	22	1.852	1.00
23	12	47	30.1	113	59	36.5	Formula fixed point of 60 M envelope of arcs generated from FOS03	22	23	1.852	1.00
24	12	47	53.2	114	0	33.2	Formula fixed point of 60 M envelope of arcs generated from FOS03	23	24	1.852	1.00
25	12	48	15.3	114	1	30.3	Formula fixed point of 60 M envelope of arcs generated from FOS03	24	25	1.852	1.00
26	12	48	36.5	114	2	27.8	Formula fixed point of 60 M envelope of arcs generated from FOS03	25	26	1.852	1.00
27	12	48	56.8	114	3	25.6	Formula fixed point of 60 M envelope of arcs generated from FOS03	26	27	1.852	1.00
28	12	49	16.1	114	4	23.8	Formula fixed point of 60 M envelope of arcs generated from FOS03	27	28	1.852	1.00
29	12	49	34.4	114	5	22.3	Formula fixed point of 60 M envelope of arcs generated from FOS03	28	29	1.852	1.00
30	12	49	51.8	114	6	21.1	Formula fixed point of 60 M envelope of arcs generated from FOS03	29	30	1.852	1.00
31	12	50	8.2	114	7	20.2	Formula fixed point of 60 M envelope of arcs generated from FOS03	30	31	1.852	1.00
32	12	50	23.7	114	8	19.5	Formula fixed point of 60 M envelope of arcs generated from FOS03	31	32	1.852	1.00
33	12	50	38.1	114	9	19.2	Formula fixed point of 60 M envelope of arcs generated from FOS03	32	33	1.852	1.00
34	12	50	51.6	114	10	19.0	Formula fixed point of 60 M envelope of arcs generated from FOS03	33	34	1.852	1.00
35	12	51	4.13	114	11	19.1	Formula fixed point of 60 M envelope of arcs generated from FOS03	34	35	1.852	1.00
36	12	51	15.6	114	12	19.4	Formula fixed point of 60 M envelope of arcs generated from FOS03	35	36	1.852	1.00
37	12	51	26.2	114	13	19.9	Formula fixed point of 60 M envelope of arcs generated from FOS03	36	37	1.852	1.00
38	12	51	35.7	114	14	20.5	Formula fixed point of 60 M envelope of arcs generated from FOS03	37	38	1.852	1.00

OECM Point ID	Latitude (N)			Longitude (E)			Method	From OECM Point	To OECM Point	Distance	
	°	'	"	°	'	"				KM	M
39	12	51	44.2	114	15	21.3	Formula fixed point of 60 M envelope of arcs generated from FOS03	38	39	1.852	1.00
40	12	51	51.8	114	16	22.2	Formula fixed point of 60 M envelope of arcs generated from FOS03	39	40	1.852	1.00
41	12	51	58.3	114	17	23.3	Formula fixed point of 60 M envelope of arcs generated from FOS03	40	41	1.852	1.00
42	12	52	3.8	114	18	24.5	Formula fixed point of 60 M envelope of arcs generated from FOS03	41	42	1.852	1.00
43	12	52	8.3	114	19	25.7	Formula fixed point of 60 M envelope of arcs generated from FOS03	42	43	1.852	1.00
44	12	52	11.9	114	20	27.0	Formula fixed point of 60 M envelope of arcs generated from FOS03	43	44	1.852	1.00
45	12	52	14.4	114	21	28.4	Formula fixed point of 60 M envelope of arcs generated from FOS03	44	45	1.852	1.00
46	12	52	15.9	114	22	29.8	Formula fixed point of 60 M envelope of arcs generated from FOS03	45	46	1.852	1.00
47	12	52	16.4	114	23	30.7	Formula fixed point of 60 M envelope of arcs generated from FOS03	46	47	1.835	0.99
48	12	52	15.9	114	24	32.1	Formula fixed point of 60 M envelope of arcs generated from FOS03	47	48	1.852	1.00
49	12	52	14.4	114	25	33.5	Formula fixed point of 60 M envelope of arcs generated from FOS03	48	49	1.852	1.00
50	12	52	11.8	114	26	34.9	Formula fixed point of 60 M envelope of arcs generated from FOS03	49	50	1.852	1.00
51	12	52	8.3	114	27	36.2	Formula fixed point of 60 M envelope of arcs generated from FOS03	50	51	1.852	1.00
52	12	52	3.8	114	28	37.4	Formula fixed point of 60 M envelope of arcs generated from FOS03	51	52	1.852	1.00
53	12	50	12.9	114	50	33.3	Formula fixed point of 60 M envelope of arcs generated from FOS02	52	53	39.822	21.50
54	12	48	30.4	115	49	7.2	Formula fixed point of 60 M envelope of arcs generated from FOS01	53	54	106.012	57.24
55	12	48	27.9	115	50	8.5	Formula fixed point of 60 M envelope of arcs generated from FOS01	54	55	1.852	1.00
56	12	48	24.4	115	51	9.8	Formula fixed point of 60 M envelope of arcs generated from FOS01	55	56	1.852	1.00
57	12	48	19.8	115	52	11.1	Formula fixed point of 60 M envelope of arcs generated from FOS01	56	57	1.852	1.00
58	12	48	14.3	115	53	12.2	Formula fixed point of 60 M envelope of arcs generated from FOS01	57	58	1.852	1.00

OECM Point ID	Latitude (N)			Longitude (E)			Method	From OECM Point	To OECM Point	Distance	
	°	'	"	°	'	"				KM	M
59	12	48	7.8	115	54	13.3	Formula fixed point of 60 M envelope of arcs generated from FOS01	58	59	1.852	1.00
60	12	48	0.2	115	55	14.2	Formula fixed point of 60 M envelope of arcs generated from FOS01	59	60	1.852	1.00
61	12	47	51.7	115	56	15.0	Formula fixed point of 60 M envelope of arcs generated from FOS01	60	61	1.852	1.00
62	12	47	42.1	115	57	15.6	Formula fixed point of 60 M envelope of arcs generated from FOS01	61	62	1.852	1.00
63	12	47	31.6	115	58	16.0	Formula fixed point of 60 M envelope of arcs generated from FOS01	62	63	1.852	1.00
64	12	47	20.1	115	59	16.3	Formula fixed point of 60 M envelope of arcs generated from FOS01	63	64	1.852	1.00
65	12	47	7.6	116	0	16.4	Formula fixed point of 60 M envelope of arcs generated from FOS01	64	65	1.852	1.00
66	12	46	54.1	116	1	16.2	Formula fixed point of 60 M envelope of arcs generated from FOS01	65	66	1.852	1.00
67	12	46	39.6	116	2	15.8	Formula fixed point of 60 M envelope of arcs generated from FOS01	66	67	1.852	1.00
68	12	46	24.2	116	3	15.2	Formula fixed point of 60 M envelope of arcs generated from FOS01	67	68	1.852	1.00
69	12	46	7.7	116	4	14.2	Formula fixed point of 60 M envelope of arcs generated from FOS01	68	69	1.852	1.00
70	12	45	50.3	116	5	13.0	Formula fixed point of 60 M envelope of arcs generated from FOS01	69	70	1.852	1.00
71	12	45	32.0	116	6	11.5	Formula fixed point of 60 M envelope of arcs generated from FOS01	70	71	1.852	1.00
72	12	45	12.7	116	7	9.7	Formula fixed point of 60 M envelope of arcs generated from FOS01	71	72	1.852	1.00
73	12	44	52.4	116	8	7.5	Formula fixed point of 60 M envelope of arcs generated from FOS01	72	73	1.852	1.00
74	12	44	31.2	116	9	4.9	Formula fixed point of 60 M envelope of arcs generated from FOS01	73	74	1.852	1.00
75	12	44	9.0	116	10	2.0	Formula fixed point of 60 M envelope of arcs generated from FOS01	74	75	1.852	1.00
76	12	43	46.0	116	10	58.7	Formula fixed point of 60 M envelope of arcs generated from FOS01	75	76	1.852	1.00
77	12	43	21.9	116	11	55.0	Formula fixed point of 60 M envelope of arcs generated from FOS01	76	77	1.852	1.00
78	12	43	1.1	116	12	41.7	60 M envelope of arcs generated from FOS01 & Intersection of the Philippines 200 M	77	78	1.547	0.84

Annex 224

United Nations Commission on the Limits of the Continental Shelf, *Receipt of the Joint Submission made by Malaysia and the Socialist Republic of Viet Nam to the Commission on the Limits of the Continental Shelf* U.N. Doc. CLCS.33.2009.LOS (7 May 2009)

United Nations Nations Unies

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TEL.: 1 (212) 963.1234 • FAX: 1 (212) 963.4879

REFERENCE: CLCS.33.2009.LOS (Continental Shelf Notification) 7 May 2009

United Nations Convention on the Law of the Sea
Montego Bay, 10 December 1982

Receipt of the joint submission made by Malaysia
and the Socialist Republic of Viet Nam
to the Commission on the Limits of the Continental Shelf

The Secretary-General of the United Nations communicates the following:

On 6 May 2009, Malaysia and the Socialist Republic of Viet Nam submitted jointly to the Commission on the Limits of the Continental Shelf, in accordance with Article 76, paragraph 8, of the Convention, information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured in respect of the southern part of the South China Sea.

It is noted that the Convention entered into force for Malaysia on 13 November 1996, and for Viet Nam on 16 November 1994.

In accordance with the Rules of Procedure of the Commission (CLCS/40/Rev.1), the present communication is circulated to all Member States of the United Nations, as well as States Parties to the Convention, in order to make public the executive summary of the joint submission, including all charts and coordinates contained in that summary. The executive summary of the joint submission is available through the website of the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, at: www.un.org/Depts/los.

The consideration of the joint submission made by the two coastal States will be included in the provisional agenda of the twenty-fourth session of the Commission to be held in New York from 10 August to 11 September 2009.

Upon completion of the consideration of the submission, the Commission shall make recommendations pursuant to Article 76 of the Convention.

G.G.-W.

Annex 225

United Nations Commission on the Limits of the Continental Shelf, *Receipt of the Submission made by Socialist Republic of Viet Nam to the Commission on the Limits of the Continental Shelf*, U.N Doc. CLCS.37.2009.LOS (11 May 2009)

United Nations Nations Unies

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REFERENCE: CLCS.37.2009.LOS (Continental Shelf Notification) 11 May 2009

United Nations Convention on the Law of the Sea
Montego Bay, 10 December 1982

Receipt of the submission made by the Socialist Republic of Viet Nam to the Commission on the Limits of the Continental Shelf

The Secretary-General of the United Nations communicates the following:

On 7 May 2009, the Socialist Republic of Viet Nam submitted to the Commission on the Limits of the Continental Shelf, in accordance with Article 76, paragraph 8, of the Convention, information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured in respect of the North Area (VNM-N).

It is noted that the Convention entered into force for Viet Nam on 16 November 1994.

According to the submitting State, this is a partial submission and "the partial submission in respect of Viet Nam's extended continental shelf 'Central Area (VNM-C)' shall be made later."

In accordance with the Rules of Procedure of the Commission (CLCS/40/Rev.1), the present communication is circulated to all Member States of the United Nations, as well as States Parties to the Convention, in order to make public the executive summary of the partial submission, including all charts and coordinates contained in that summary. The executive summary of the partial submission is available through the website of the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, at: www.un.org/Depts/los.

The consideration of the partial submission made by Viet Nam will be included in the provisional agenda of the twenty-fourth session of the Commission to be held in New York from 10 August to 11 September 2009.

Upon completion of the consideration of the submission, the Commission shall make recommendations pursuant to Article 76 of the Convention.

Annex 226

United Nations, Commission on the Limits of the Continental Shelf, *Recommendations of the Commission on the Limits of the Continental Shelf in Regard to the Submission Made by the Philippines in Respect of the Benham Rise Region on 8 April 2009*, U.N. Doc. CLCS/74 (30 Apr. 2012)

United Nations Convention on the Law of the Sea

Commission on the Limits of the Continental Shelf

RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE SUBMISSION MADE BY THE PHILIPPINES IN RESPECT OF THE BENHAM RISE REGION ON 8 APRIL 2009

Recommendations prepared by the Subcommission established for the consideration of the Submission made by the Philippines

Adopted by the Subcommission on 2 April 2012, and submitted to the Commission on the Limits of the Continental Shelf for consideration and approval by the Commission

Adopted by the Commission on 12 April 2012

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LIST OF TERMS AND ABBREVIATIONS

Acronyms	
DOALOS	Division for Ocean Affairs and Law of the Sea, Office of Legal Affairs
FOS	Foot of the continental slope
Abbreviated Terms	
Critical FOS Points	Foot of the continental slope points that generate formula fixed points on the line of the outer limits of the continental shelf
FOS Points	Foot of the continental slope points
Depth Constraint	The constraint line constructed at 100 M from the 2500 metre isobaths in accordance with article 76, paragraphs 5 and 6, of the Convention
Distance Constraint	The constraint line constructed at 350 M from the territorial sea baseline in accordance with article 76, paragraphs 5 and 6, of the Convention
M	Nautical mile
Relevant FOS point	Foot of the continental slope points that generate formula fixed points on the outer edge of the continental margin that are necessary for the construction of the outer limits of the continental shelf
Secretary-General	The Secretary-General of the United Nations
Sediment Thickness Formula Points	Points determined from the application of Article 76, paragraph 4(a)(i), of the Convention (also informally referred to as Gardiner points)
Territorial Sea Baselines	The baselines from which the breadth of the territorial sea is measured
The Guidelines	The Scientific and Technical Guidelines of the Commission (CLCS/11 and CLCS/11/Add.1)
The Commission	The Commission on the Limits of the Continental Shelf
The Convention	The United Nations Convention on the Law of the Sea of 10 December 1982
The Rules of Procedure	The Rules of Procedure of the Commission (CLCS/40/Rev.1)
60 M Formula Points	Points determined from the application of article 76, paragraph 4(a)(ii), of the Convention (also informally referred to as Hedberg points)
200 M Limit	The line at 200 M from the baselines from which the breadth of the territorial sea is measured
Use of Terms	
Determine the foot of the continental slope	
Delineate the outer edge of the continental margin (in terms of construction of the outer edge of the continental margin by establishing and connecting fixed points)	
Delineate the outer limits of the continental shelf (in terms of construction of the outer limits of the continental shelf by establishing and connecting fixed points)	
Establish the outer edge of the continental margin (in terms of following procedure in the Convention for submitting the outer edge of the continental margin as basis for the outer limits of the continental shelf)	
Establish the outer limits of the continental shelf (in terms of following procedure in the Convention for the submission of the outer limits of the continental shelf)	

I. INTRODUCTION

1 On 8 April 2009, the Republic of the Philippines ("the Philippines") submitted to the Commission on the Limits of the Continental Shelf through the Secretary-General of the United Nations, information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, in accordance with article 76, paragraph 8 of the United Nations Convention on the Law of the Sea of 10 December 1982.

2 The Convention entered into force for the Philippines on 16 November 1994.

3 The Submission of the Philippines pertained to the Benham Rise Region.[1] According to the submitting State this is a partial submission which is without prejudice to the right of the Philippines to make other submissions for other areas at a future time.[2]

4 On 21 April 2009, the Secretary-General issued Continental Shelf Notification CLCS.22.2009.LOS in order to give due publicity to the Executive Summary of the Submission in accordance with rule 50 of the Rules of Procedure of the Commission. In conformity with rule 51 of the Rules of Procedure, the consideration of the Submission made by the Philippines was included in the agenda of the twenty-fourth session of the Commission.

5 The Commission received no notes verbales from other States in relation to the Submission.

6 The presentation of the Submission to the Commission was made on 25 August 2009 by Mr. Hilario G. Davide Jr., Permanent Representative of the Republic of the Philippines to the United Nations, and Ms. Minerva Jean A. Falcon, Ambassador, Department of Foreign Affairs. The Delegation of the Philippines also included a number of scientific, legal and technical advisers.

7 Mr. Davide indicated that Mr. Galo Carrera, a member of the Commission, had assisted the Philippines by providing scientific and technical advice with respect to the submission.

8 Ms. Falcon noted that this submission was a partial one, in accordance with section 3 of Annex I to the Rules of Procedure, on the outer limits of the continental shelf in the Benham Rise Region and that the Philippines reserved the right to make future submissions in other areas.

9 In reference to paragraph 2 (a) of Annex I to the Rules of Procedure, Ms. Falcon informed the Commission that the submission was not the subject of any dispute, and that no note verbale concerning the submission from any other coastal State had been made.

10 The Commission addressed the modalities for the consideration of the Submission. It decided that, as provided for in article 5 of Annex II to the Convention and in rule 42 of the Rules of Procedure, the Submission would be addressed through the establishment of a Subcommission, which was established during the twenty-seventh session of the Commission.

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[1] The list of the material included in the original Submission is contained in Annex II to the Recommendations.

[2] See CLCS.22.2009.LOS at http://www.un.org/depts/los/clcs_new/submissions_files/submission_phl_22_2009.htm

11 The following members of the Commission were elected as members of the Subcommission for consideration of the Submission made by the Philippines: Messrs. Osvaldo Pedro Astiz, Lawrence Folajimi Awosika, Harald Brekke, Peter F. Croker, Yong Ahn Park, Michael Anselme Marc Rosette and Kensaku Tamaki. The Subcommission elected Mr. Awosika as its Chairperson, and Messrs. Park and Rosette as its Vice-Chairpersons.

12 Following its establishment, the Subcommission met without delay to conduct a preliminary examination of the Submission and the data accompanying it. It was determined that given the volume and nature of the data contained in the Submission, the Subcommission would require additional time, including resumed sessions, for the consideration of the Submission.

13 Following consultations during the twenty-eighth session, the Commission appointed Mr. Tetsuro Urabe to fill the vacancy that had occurred in the Subcommission following the untimely demise of Mr. Tamaki.

14 The Subcommission carried out its examination of the submission during the following sessions: twenty-seventh, twenty-eighth, resumed twenty-eighth and twenty-ninth. During these sessions the Subcommission held 25 days of meetings. It also held seven meetings with the Delegation, posed questions in writing, presented preliminary considerations involving documents and PowerPoint presentations and one consolidated set of views and general conclusions covering the whole Submission, as well as an outline of the Recommendations being prepared by the Subcommission.[3] During the examination of the Submission, the Subcommission requested and received support from the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, in particular in the form of technical support by DOALOS Geographical Information Systems staff.

15 The Subcommission adopted its Recommendations on 2 April 2012, and submitted them to the Commission on 2 April 2012 for consideration and approval.

16 On 12 April 2012, a meeting was held, at the request of the Philippines, between its delegation and the Commission, pursuant to paragraph 15 (1 bis) of annex III to the Rules of Procedure of the Commission. At that meeting, the presentation of the Philippines was made by Libran N. Cabactulan, Permanent Representative of the Philippines to the United Nations. The Delegation of the Philippines also included a number of advisers.

17 The Commission prepared these Recommendations, which were adopted on 12 April 2012, taking into consideration the internal procedures and the methodology outlined in the following documents of the Commission: the Rules of Procedure, the Scientific and Technical Guidelines and article 6 of Annex II to the Convention.

18 The Commission makes these Recommendations to the Philippines in fulfilment of its mandate as contained in article 76, paragraph 8 of, and articles 3 and 5 of Annex II to the Convention.

19 A Summary of the Recommendations is included as Annex V of this document in conformity with paragraph 11.3 of Section V, Annex III to the Rules of Procedure.

20 The Commission makes its recommendations recognising that the outer limits of the continental shelf as established by a coastal State on the basis of its

[3] The material supplied to the Delegations by the Subcommission is contained in Annex IV to the Recommendations.

recommendations shall be final and binding according to article 76, paragraph 8, of the Convention.

II. CONTENTS OF THE SUBMISSION

A. Original Submission

21 The original Submission received on 8 April 2009 contained: an Executive Summary; a Main Body which is the analytical and descriptive part; and Scientific and Technical Data. A list of the material included in the Submission received on 8 April 2009 is included as Annex II to these Recommendations.

B. Communications and additional material

22 In the course of the examination of the Submission by the Subcommission, the Delegation submitted additional material, including in response to questions, requests for clarification and written preliminary considerations of the Subcommission. Lists of both the additional material submitted by the Philippines and the communications of the Subcommission are included as Annexes III and IV, respectively, to these Recommendations.

III. EXAMINATION OF THE SUBMISSION BY THE SUBCOMMISSION

A. Examination of the format and completeness of the Submission

23 Pursuant to paragraph 3 of Section III, Annex III to the Rules of Procedure, the Subcommission examined and verified the format and completeness of the Submission.

B. Preliminary analysis of the Submission

24 Pursuant to paragraph 5 of Section III, Annex III to the Rules of Procedure, the Subcommission undertook a preliminary analysis of the Submission, in accordance with article 76 of the Convention and the Guidelines and concluded as follows:

(i) The outer edge of the continental margin, as established by the 60 M formula lies beyond 200 M and, therefore, the test of appurtenance was satisfied by the Philippines;

(ii) The proposed outer limits of the Philippine continental shelf beyond 200 M consists of 60 M formula points;

(iii) The construction of the outer limits of the continental shelf contains no straight line segments exceeding 60 M in length;

(iv) Additional time would be required to review all data and to prepare the recommendations during future sessions of the Commission.

C. Main scientific and technical examination of the Submission

25 The Subcommission examined the Submission through the following processes:

(i) Detailed examination of the data and information supporting the FOS points selected for the establishment of the outer edge of the continental margin and for the delineation of the proposed outer limits of the continental shelf following consideration of the applicable constraint;

(ii) Seeking clarifications from the Delegation;

(iii) Presenting preliminary conclusions to the Delegation;

(iv) Making a comprehensive presentation of the views and general conclusions of the Subcommission to the Delegation, at an advanced stage of the examination of the Submission.

IV. GENERAL PRINCIPLES ON WHICH THESE RECOMMENDATIONS ARE BASED

26 The Recommendations of the Commission are based on the scientific and technical data and other material provided by the Philippines in relation to the implementation of article 76. The Recommendations of the Commission only deal with issues related to article 76 and Annex II to the Convention and are without prejudice to matters relating to delimitation between States, or application of other parts of the Convention or any other treaties.

V. RECOMMENDATIONS

1. Geographical and geological description of the region

27 The continental margin of the Philippines in the Benham Rise Region is bounded to the north and east by the West Philippine Basin, and to the west and south by the Philippine island of Luzon.

28 The Benham Rise region consists of the Benham Rise itself, Molave Spur, Molave Saddle, Narra Spur and Narra Saddle (Figure 1). The Benham Rise is connected to the Philippine archipelago along Bicol Saddle to the southwest and Palanan Saddle to the west.

29 The Benham Rise, Molave Spur and Narra Spur constitute a volcanic plateau which stands about 3,500 m above the surrounding seafloor at its crest and about 500 m above the surrounding seafloor along its northern and eastern margins. To the west and southwest, it is connected with the eastern margin of Luzon through the Palanan and Bicol saddles, respectively. The Benham Rise was formed about 37 Ma by intraplate igneous activity resulting in significantly thicker crust than that of the deep ocean floor of the West Philippine Basin. The Benham Rise was accreted to Luzon about 20 Ma along a fossil subduction zone at the East Luzon margin.

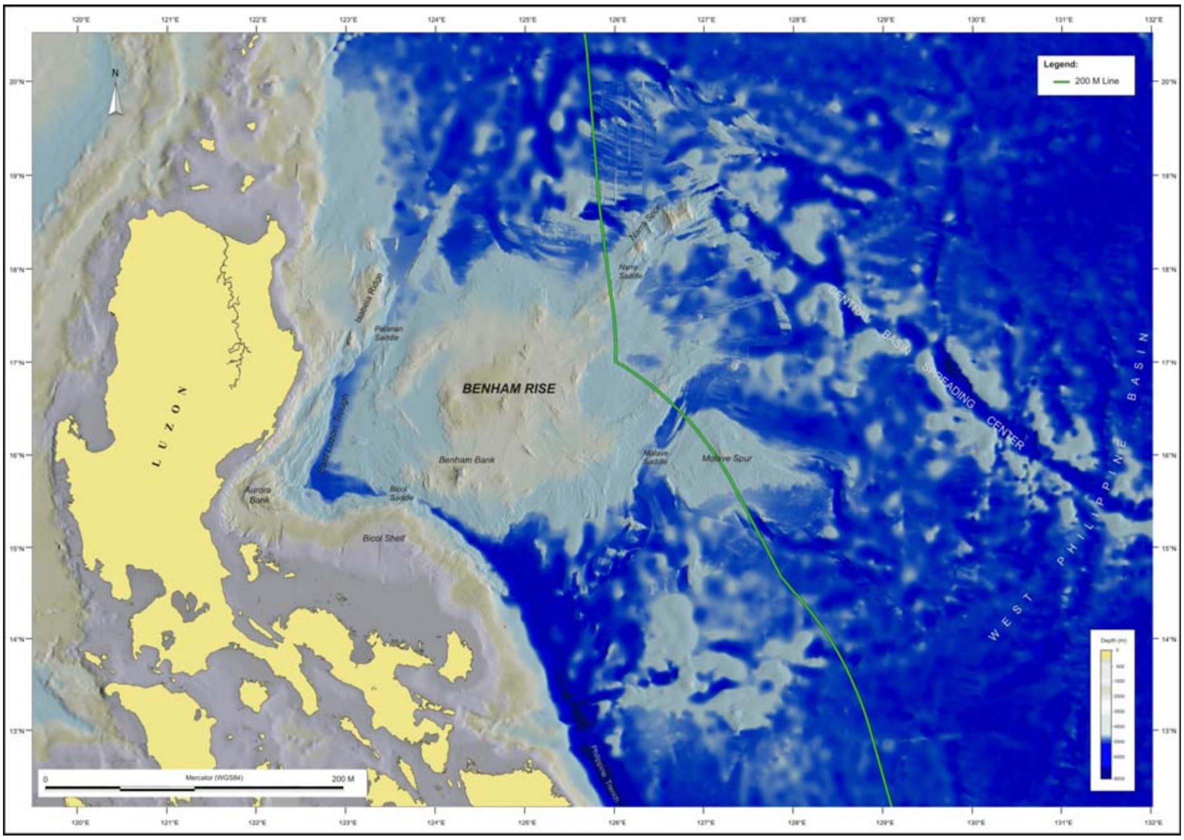

Figure 1. Benham Rise Region with the 200 M limit of the Philippines (Source: Figure 2.9 of the Main Body)

2. Notes verbales submitted by other States

30 The Commission received no notes verbales from other States in relation to the Submission.

3. Submerged prolongation of the land mass and entitlement to the continental shelf beyond 200 M

31 The Philippine islands, including Luzon, constitute the land mass in the region. The Benham Rise and its subsidiaries, the Molave and Narra spurs, form a composite morphological feature that constitutes the submarine prolongation of that land mass by way of the FOS envelope.

32 The outer edge of the continental margin, established from the FOS of the Benham Rise Region by applying the provisions of article 76, paragraph 4, of the Convention, extends beyond the 200 M limits of the Philippines. On this basis, the Commission recognises the legal entitlement of the Philippines to delineate the outer limits of its continental shelf beyond its 200 M limits in this region.

4. The determination of the foot of the continental slope

33 The FOS should be established in accordance with article 76, paragraph 4(b), of the Convention.

4.1 Considerations

34 The Philippines originally submitted eight critical FOS points that generate formula points beyond the 200 M limits of the Philippines in the Benham Rise Region, BR-FOS-7, -9, -10, -11, -15, -20, -21 and -23.

35 The base of the slope zone (BOS) in which these FOS points were established, was determined by the Philippines on the basis of morphology of the flanks of the Benham Rise and its subsidiaries, the Narra and Molave spurs.

36 The Commission agrees with the Philippines that the continental rise is absent in this region and therefore, the BOS is located where the lower slope merges with the deep ocean floor. In the view of the Subcommission, the BOS is generally easily identified on the basis of morphology. On this basis, the Subcommission agreed with the locations of the FOS points BR-FOS-9, -10, -11, -15, -20 and -21. However, it did not agree with the FOS points BR-FOS-7 and -23.

37 In its communication SCPHL_DOC_PHL_001_16_05_2011, the Subcommission expressed the view that the location of BR-FOS-7 on the profile submitted (Figure 2) had been compromised by the way the slope had been averaged. The line of the average slope seemed to place the FOS point away from the real base of the slope. Hence, the Subcommission was of the view that the maximum change in gradient on this profile occurs at a point more landward (approximate distance of about 780 m) of the position of the FOS point identified by the Philippines (Figure 3).

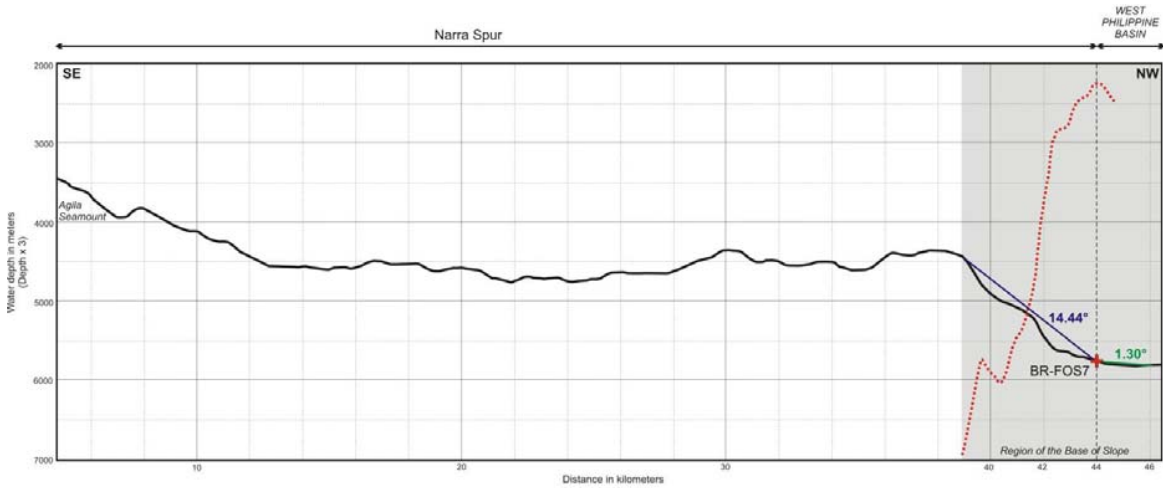

Figure 2. Bathymetric profile PR-BR7 (Source: Annex 4.2.2 of the Supporting Document)

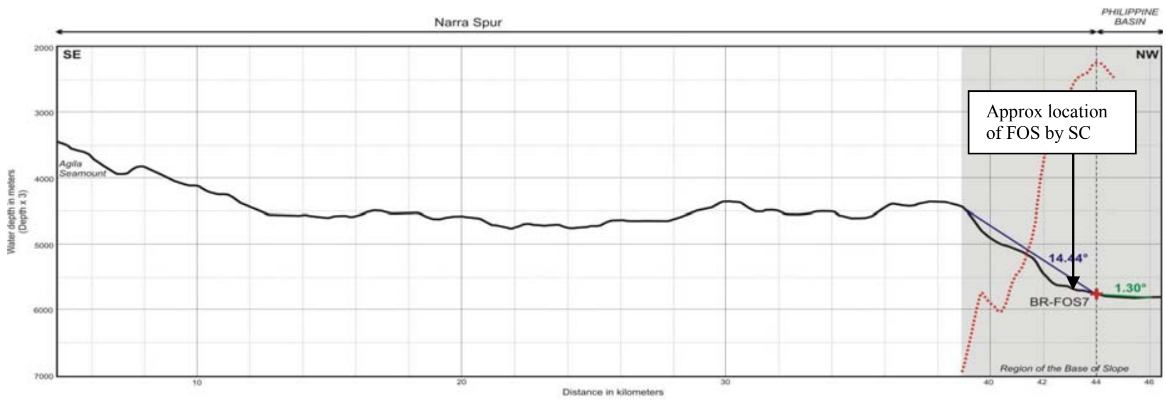

Figure 3. Bathymetric profile PR-BR7 indicating maximum change of gradient in base of slope zone (Source: Modified from Annex 4.2.2 of the Supporting Document)

38 In its response RP-BR-R2 the Philippines identified a revised location for the point BR-FOS-7 in accordance with the view of the Subcommission. The Commission agrees with this location.

39 The FOS point BR-FOS-23 was located at the seaward end of an elevated feature separated from the Molave Spur by a low-lying area which was, in the view of the Philippines is a saddle connecting it to the Molave Spur (Figures 4a and b). In its communication SCPHL_DOC_PHL_002_02_09_2011 the Subcommission expressed the view that the base of slope is approximately at 5,000 to 5,100 m depth in this area (Figure 5) with the result that this low-lying area is part of the deep ocean floor. Consequently, the elevated feature is not a part of the submerged prolongation of the Molave Spur. The Subcommission therefore asked that point BR-FOS-23 be replaced by a new FOS point.

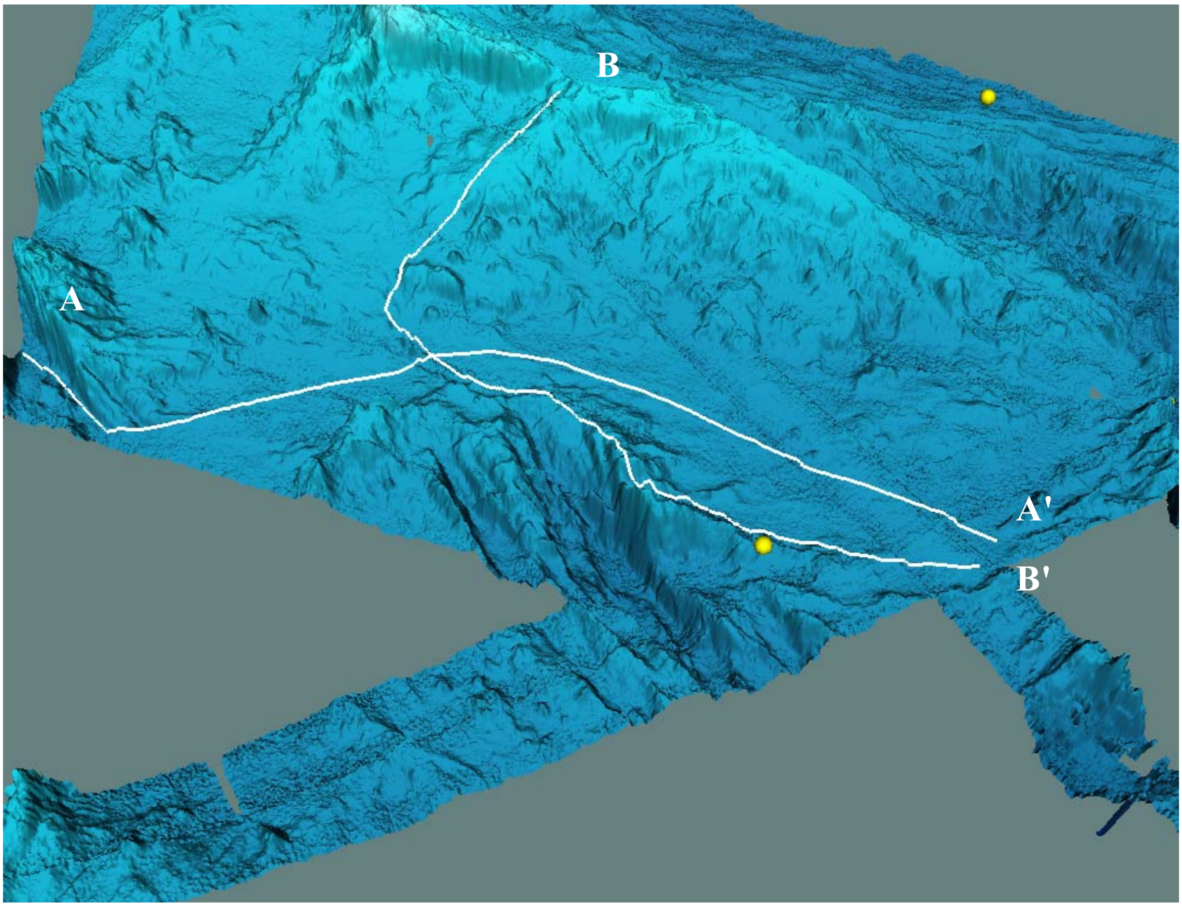

Figure 4a. Location of profile from Molave Spur along crest of saddle and through BR-FOS-23, and profile along saddle. (Figure created by Subcommission from materials provided by Delegation)

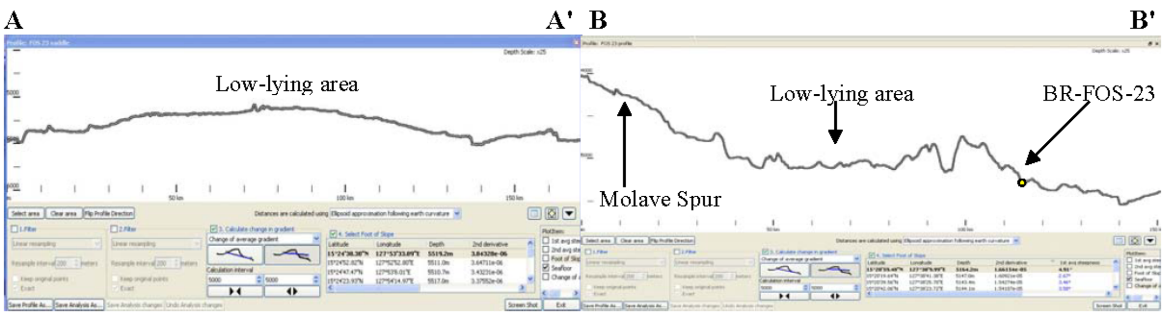

Figure 4b. Profile along low-lying area, left. Profile from Molave Spur along crest of low-lying area and through BR-FOS-23, right. (Figure created by Subcommission from materials provided by Delegation)

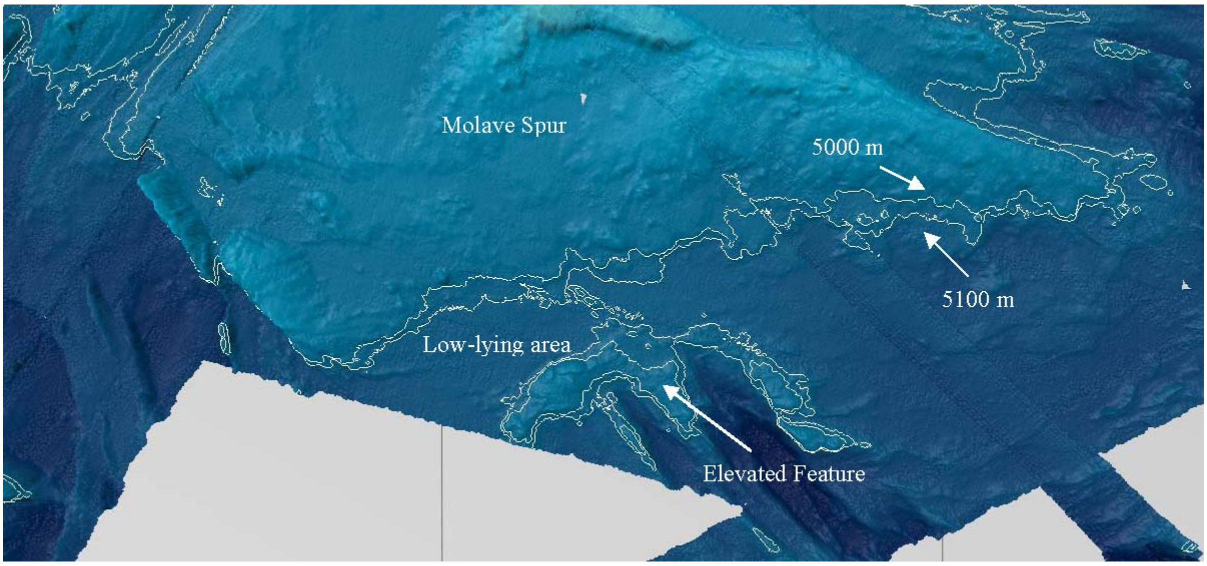

Figure 5. 5,000 and 5,100 m isobaths around the Molave Spur and the elevated feature. (Figure created by Subcommission from materials provided by Delegation)

40 After a series of interactions between the Subcommission and the Delegation of the Philippines, the Philippines submitted a revised method of bridging the formula line and the 200 M line of the Philippines. By this method, the last fixed point on the 60 M arc, generated from BR-FOS-21, was joined to the 200 M limit by the line of shortest distance, not longer than 60 M. In this way, FOS point BR-FOS-23 became redundant with respect to the establishment of the outer limit, and no longer counts as a critical FOS point. The Subcommission agreed with this approach in its Communication SCPHL_LET_PHL_005_09_12_2011.

41 Following this agreed approach, the Delegation of the Philippines also submitted a revised bridging with the northern 200 M line of the Philippines based on the same principle. By doing so, the FOS points BR-FOS-7 and -9 became redundant with respect to the establishment of the outer limit, and no longer count as critical FOS points. The Subcommission agreed with this approach.

42 As a result of the examination and consideration of the material and information originally submitted together with those provided during the interactions with the Delegation of the Philippines, the Subcommission agreed with the location of the points BR-FOS-7 (as revised), -9, -10, -11, -15, -20 and -21, of which BR-FOS-10, -11, -15, -20 and -21 are critical FOS points.

4.2 Recommendations

43 The Commission concludes that, in the Benham Rise Region, the five critical FOS points referred to above and listed in Table 1 of Annex I, fulfil the requirements of article 76 and Chapter 5 of the Guidelines. The Commission recommends that these FOS points should form the basis for the establishment of the outer edge of the continental margin in the Benham Rise Region.

5. The establishment of the outer edge of the continental margin

44 The outer edge of the continental margin of the Philippines in the Benham Rise Region should, for the purposes of the Convention, be established in accordance with article 76, paragraphs 4 and 7, of the Convention.

5.1 The application of the 60 M distance formula

45 For the purpose of establishing the outer edge of the continental margin in the Benham Rise Region, fixed points were determined on arcs constructed at a distance of not more than 60 M from FOS points on the continental margin of the Benham Rise Region, in accordance with the provision contained in article 76, paragraph 4(a)(ii), of the Convention. These points are listed in Table 1, Annex I.

46 The Commission agrees with the way these points have been established in the Benham Rise Region by the Philippines.

5.2 Recommendations

47 In the Benham Rise Region, the outer edge of the continental margin beyond 200 M is based on points on the 60 M arcs as described in section 5.1, in accordance with article 76, paragraph 7, of the Convention. The Commission recommends that these points be used as the basis for delineating the outer limits of the continental margin in this region.

6. The delineation of the outer limits of the continental shelf

48 The outer limits of the continental shelf should be based on the established outer edge of the continental margin, taking into consideration the constraints contained in article 76, paragraphs 5 and 6, of the Convention.

6.1 The application of constraint criteria

49 The outer limits of the continental shelf cannot extend beyond the constraints as per the provisions contained in article 76, paragraph 5, of the Convention. Accordingly, the provision that the outer limits of the continental shelf may not exceed 350 M from the baselines from which the breadth of the territorial sea is measured may be applied in all cases. Alternatively, the provision that the outer limits of the continental shelf may not exceed 100 M from the 2,500 m isobath may be applied to those parts of the continental margin that are classified as natural components of that margin.

50 For the outer limits of the continental shelf in the Benham Rise Region, the Philippines has invoked the FOS plus 60 M formula with the result that no part of the outer edge of the continental margin exceeds any of the constraints.

6.1.1 The construction of the distance constraint line

51 The distance constraint line submitted by the Philippines is constructed by arcs at 350 M distance from the baselines from which the breadth of the territorial sea of the Philippines is measured. The Commission agrees with the procedure and methods applied by the Philippines in the construction of this constraint line (Figure 6).

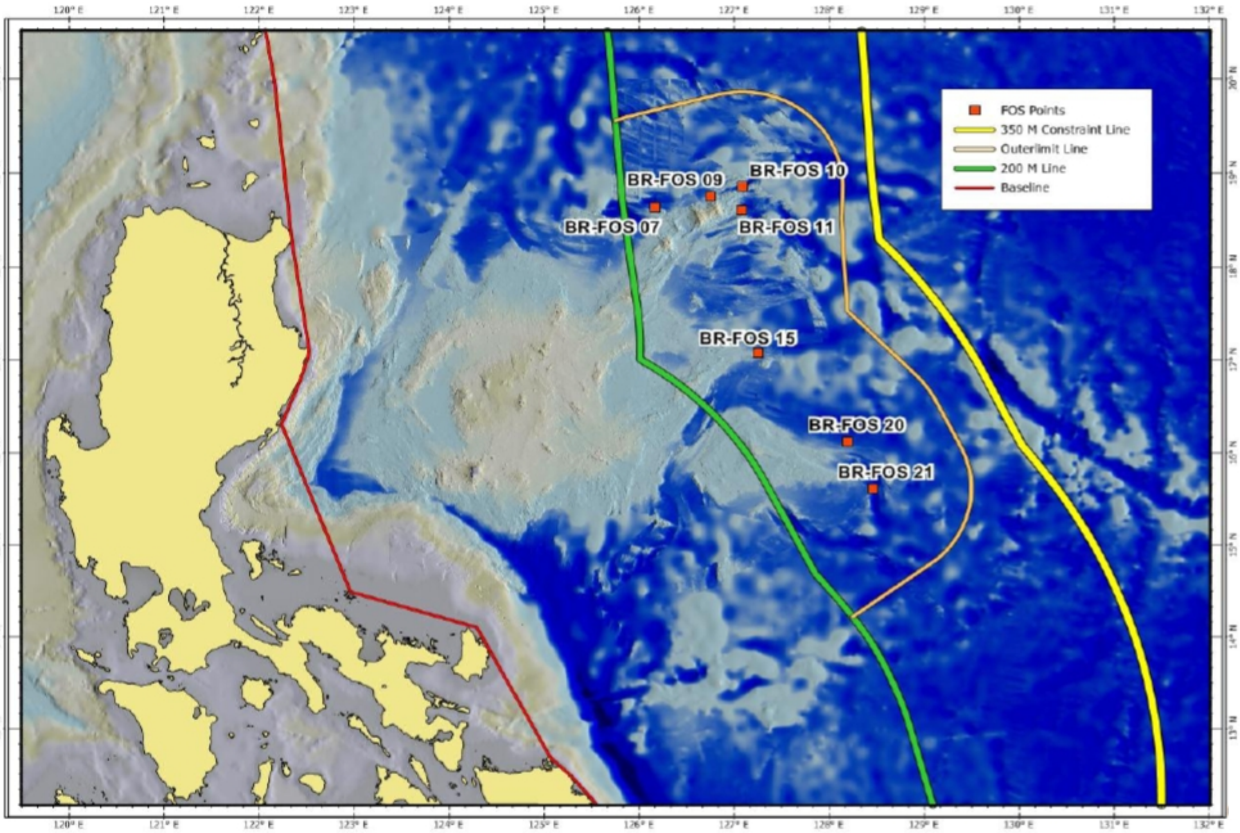

Figure 6. Location of the distance constraint line (yellow) and the outer limits of the continental shelf (pale orange) (Source: Presentation, Response to the Presentation of the Subcommission to the Philippines on 7 December 2011, slide 6)

6.2 The outer limits of the continental shelf

52 The outer limits of the continental shelf in the Benham Rise Region as contained in the Submission of the Philippines consists of fixed points connected by straight lines not exceeding 60 M in length (Figure 7). The fixed points are listed in Table 2, Annex I, as submitted under letter of 28 March 2012. The fixed points are established by the provisions contained in article 76, paragraph 4(a), of the Convention, and points located on the 200 M limit line of the Philippines north of Narra Spur and south of Molave Spur.

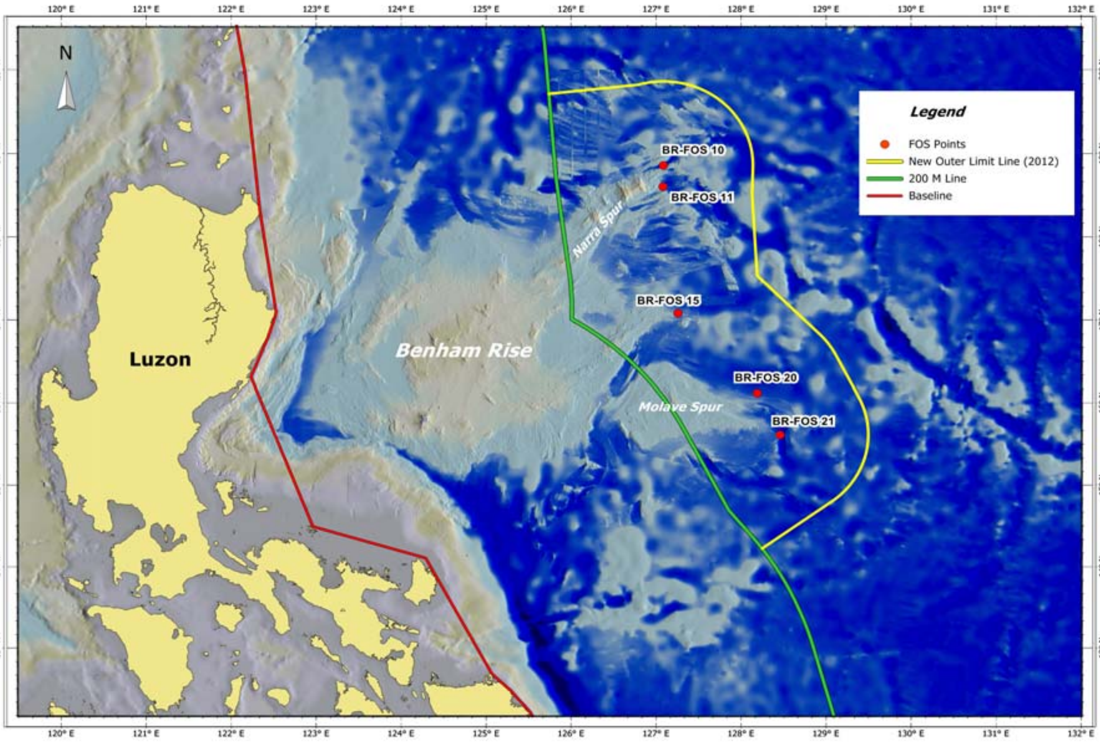

Figure 7. Map of the outer limits of the continental shelf beyond 200 M of the Philippines in the Benham Rise Region. (Source: Document RP-BR-R7 submitted under letter of 28 March 2012)

53 The Commission agrees that the determination of the last segment of the outer limits of the continental shelf may be established either by the intersection of the formula line, in accordance with Article 76, paragraph 4 and 7, and the 200 M limit from the archipelagic baselines from which the breadth of the territorial sea is measured, or by the line of shortest distance, not exceeding 60 M in length, between the last fixed formula point and the 200 M limit.

6.3 Recommendations

54 The Commission recommends that the delineation of the outer limits of the continental shelf in the Benham Rise Region be conducted in accordance with paragraph 7 of article 76, of the Convention by straight lines not exceeding 60 M in length, connecting fixed points, defined by coordinates of latitude and longitude. Further, the Commission agrees with the principles applied in delineating the outer limits of the continental shelf in the Benham Rise Region, including the determination of the fixed points listed in Table 2, Annex I, and the construction of the straight lines connecting those points. The Commission recommends that the Philippines proceed to establish the outer limits of the continental shelf beyond 200 M accordingly.

ANNEX I

TABLE 1. GEOGRAPHIC COORDINATES OF AGREED CRITICAL FOS POINTS

CRITICAL FOS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)		
			DEG	MIN	SEC	DEG	MIN	SEC
BR-FOS10	127.08514404	18.85784912	127	5	6.52	18	51	28.26
BR-FOS11	127.07955278	18.60366111	127	4	46.39	18	36	13.18
BR-FOS15	127.25640869	17.08072090	127	15	23.07	17	4	50.60
BR-FOS20	128.18887329	16.11800957	128	11	19.94	16	7	4.83
BR-FOS21	128.46021940	15.61249444	128	27	36.79	15	36	44.98

TABLE 2. GEOGRAPHIC COORDINATES AND OTHER INFORMATION RELATED TO THE ESTABLISHMENT OF THE OUTER LIMITS OF THE CONTINENTAL SHELF BEYOND 200 M IN THE BENHAM RISE REGION[1]

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-001	125.73723154	19.71376345	125	44	14.03	19	42	49.55		59.852	BR-FOS10
ECS-B-002	126.78879188	19.82145761	126	47	19.65	19	49	17.25	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-003	126.80579698	19.82602277	126	48	20.87	19	49	33.68	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-004	126.82288070	19.83032001	126	49	22.37	19	49	49.15	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-005	126.84004080	19.83434512	126	50	24.15	19	50	3.64	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-006	126.85726820	19.83809811	126	51	26.17	19	50	17.15	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-007	126.87456080	19.84157475	126	52	28.42	19	50	29.67	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-008	126.89191170	19.84477931	126	53	30.88	19	50	41.21	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-009	126.90931880	19.84770756	126	54	33.55	19	50	51.75	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-010	126.92677540	19.85035739	126	55	36.39	19	51	1.29	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-011	126.94427680	19.85273094	126	56	39.4	19	51	9.83	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-012	126.96181640	19.85482821	126	57	42.54	19	51	17.38	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-013	126.97939190	19.85664498	126	58	45.81	19	51	23.92	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-014	126.99699890	19.85818337	126	59	49.2	19	51	29.46	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-015	127.01462830	19.85944127	127	0	52.66	19	51	33.99	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10

[1] The continental margin is defined by fixed points ECS-B-002 to ECS-B-225.

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-016	127.03228020	19.86042080	127	1	56.21	19	51	37.51	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-017	127.04994560	19.86111987	127	2	59.8	19	51	40.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-018	127.06762000	19.86153632	127	4	3.43	19	51	41.53	Art 76 (4)(a)(ii): FOS + 60M	0.991	BR-FOS10
ECS-B-019	127.08514380	19.86167444	127	5	6.52	19	51	42.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-020	127.10282490	19.86153420	127	6	10.17	19	51	41.52	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-021	127.12049930	19.86111349	127	7	13.8	19	51	40.01	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-022	127.13816470	19.86041231	127	8	17.39	19	51	37.48	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-023	127.15581660	19.85943064	127	9	20.94	19	51	33.95	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-024	127.17344600	19.85817062	127	10	24.41	19	51	29.41	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-025	127.19105070	19.85663010	127	11	27.78	19	51	23.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-026	127.20862630	19.85481121	127	12	31.05	19	51	17.32	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-027	127.22616810	19.85271181	127	13	34.21	19	51	9.76	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-028	127.24366730	19.85033614	127	14	37.2	19	51	1.21	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-029	127.26112380	19.84768206	127	15	40.05	19	50	51.66	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-030	127.27853090	19.84475169	127	16	42.71	19	50	41.11	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-031	127.29588190	19.84154500	127	17	45.17	19	50	29.56	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-032	127.31317220	19.83806623	127	18	47.42	19	50	17.04	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-033	127.33039960	19.83431112	127	19	49.44	19	50	3.52	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-034	127.34755750	19.83028389	127	20	51.21	19	49	49.02	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-035	127.36464120	19.82598451	127	21	52.71	19	49	33.54	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-036	127.38164630	19.82141511	127	22	53.93	19	49	17.09	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-037	127.39856830	19.81657564	127	23	54.85	19	48	59.67	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-038	127.41540050	19.81147035	127	24	55.44	19	48	41.29	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-039	127.43213830	19.80609707	127	25	55.7	19	48	21.95	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-040	127.44877960	19.80046002	127	26	55.61	19	48	1.66	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-041	127.46531760	19.79455919	127	27	55.14	19	47	40.41	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-042	127.48174780	19.78839667	127	28	54.29	19	47	18.23	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-043	127.49806570	19.78197455	127	29	53.04	19	46	55.11	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-044	127.51426910	19.77529493	127	30	51.37	19	46	31.06	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-045	127.53034890	19.76835990	127	31	49.26	19	46	6.10	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-046	127.54630300	19.76116942	127	32	46.69	19	45	40.21	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-047	127.56212900	19.75372772	127	33	43.66	19	45	13.42	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-048	127.57781810	19.74603476	127	34	40.15	19	44	45.73	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-049	127.59337020	19.73809476	127	35	36.13	19	44	17.14	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-050	127.60877630	19.72990979	127	36	31.59	19	43	47.68	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-051	127.62403640	19.72147984	127	37	26.53	19	43	17.33	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-052	127.63914390	19.71281124	127	38	20.92	19	42	46.12	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-053	127.65409630	19.70390181	127	39	14.75	19	42	14.05	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-054	127.66888710	19.69475791	127	40	7.99	19	41	41.13	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-055	127.68351170	19.68537950	127	41	0.64	19	41	7.37	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-056	127.69797000	19.67577290	127	41	52.69	19	40	32.78	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-057	127.71225550	19.66593597	127	42	44.12	19	39	57.37	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-058	127.72636350	19.65587290	127	43	34.91	19	39	21.14	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-059	127.74028970	19.64559003	127	44	25.04	19	38	44.12	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-060	127.75403160	19.63508733	127	45	14.51	19	38	6.31	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-061	127.76758720	19.62436689	127	46	3.31	19	37	27.72	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-062	127.78094970	19.61343290	127	46	51.42	19	36	48.36	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-063	127.79411450	19.60228959	127	47	38.81	19	36	8.24	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-064	127.80708170	19.59093692	127	48	25.49	19	35	27.37	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-065	127.81984450	19.57938121	127	49	11.44	19	34	45.77	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-066	127.83240070	19.56762457	127	49	56.64	19	34	3.45	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-067	127.84474580	19.55567120	127	50	41.08	19	33	20.42	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-068	127.85687980	19.54352318	127	51	24.77	19	32	36.68	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-069	127.86879590	19.53118474	127	52	7.67	19	31	52.27	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-070	127.88048970	19.51865796	127	52	49.76	19	31	7.17	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-071	127.89196120	19.50594919	127	53	31.06	19	30	21.42	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-072	127.90320590	19.49305837	127	54	11.54	19	29	35.01	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-073	127.91422150	19.47999186	127	54	51.2	19	28	47.97	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-074	127.92500350	19.46675175	127	55	30.01	19	28	0.31	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-075	127.93554970	19.45334225	127	56	7.98	19	27	12.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-076	127.94585790	19.43976972	127	56	45.09	19	26	23.17	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-077	127.95592350	19.42603198	127	57	21.32	19	25	33.72	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-078	127.96574430	19.41213964	127	57	56.68	19	24	43.70	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-079	127.97532040	19.39809054	127	58	31.15	19	23	53.13	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-080	127.98464490	19.38389316	127	59	4.72	19	23	2.02	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-081	127.99371790	19.36954960	127	59	37.38	19	22	10.38	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-082	128.00253490	19.35506407	128	0	9.13	19	21	18.23	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-083	128.01109580	19.34044081	128	0	39.94	19	20	25.59	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-084	128.01939850	19.32568404	128	1	9.83	19	19	32.46	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-085	128.02743840	19.31079799	128	1	38.78	19	18	38.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-086	128.03521330	19.29578476	128	2	6.77	19	17	44.83	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-087	128.04272550	19.28065285	128	2	33.81	19	16	50.35	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-088	128.04996590	19.26540222	128	2	59.88	19	15	55.45	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-089	128.05693910	19.25003710	128	3	24.98	19	15	0.13	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-090	128.06364050	19.23456601	128	3	49.11	19	14	4.44	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-091	128.07006570	19.21899104	128	4	12.24	19	13	8.37	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-092	128.07621690	19.20331430	128	4	34.38	19	12	11.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-093	128.08209190	19.18754429	128	4	55.53	19	11	15.16	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-094	128.08768840	19.17168100	128	5	15.68	19	10	18.05	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-095	128.09300420	19.15573292	128	5	34.82	19	9	20.64	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-096	128.09803920	19.13970218	128	5	52.94	19	8	22.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-097	128.10279130	19.12359301	128	6	10.05	19	7	24.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-098	128.10726040	19.10741181	128	6	26.14	19	6	26.68	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-099	128.11144210	19.09116068	128	6	41.19	19	5	28.18	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-100	128.11533850	19.07484601	128	6	55.22	19	4	29.45	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-101	128.11894750	19.05847207	128	7	8.21	19	3	30.50	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-102	128.12226910	19.04204309	128	7	20.17	19	2	31.36	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-103	128.12530310	19.02556334	128	7	31.09	19	1	32.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-104	128.12804520	19.00903708	128	7	40.96	19	0	32.53	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-105	128.13049760	18.99247071	128	7	49.79	18	59	32.89	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-106	128.13265810	18.97586848	128	7	57.57	18	58	33.13	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-107	128.13452880	18.95923252	128	8	4.3	18	57	33.24	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-108	128.13610540	18.94256925	128	8	9.98	18	56	33.25	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-109	128.13739220	18.92588505	128	8	14.61	18	55	33.19	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-110	128.13838480	18.90918207	128	8	18.19	18	54	33.06	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-111	128.13908550	18.89246457	128	8	20.71	18	53	32.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-112	128.13949200	18.87573898	128	8	22.17	18	52	32.66	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-113	128.13960650	18.85900741	128	8	22.58	18	51	32.43	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-114	128.13942910	18.84227844	128	8	21.94	18	50	32.20	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-115	128.13895750	18.82555419	128	8	20.25	18	49	32.00	Art 76 (4)(a)(ii): FOS + 60M	15.195	BR-FOS10
ECS-B-116	128.13179570	18.57140926	128	7	54.46	18	34	17.07	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10; BR-FOS11
ECS-B-117	128.13103440	18.55469433	128	7	51.72	18	33	16.90	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS11
ECS-B-118	128.12998330	18.53799272	128	7	47.94	18	32	16.77	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS11
ECS-B-119	128.12863810	18.52131090	128	7	43.1	18	31	16.72	Art 76 (4)(a)(ii): FOS + 60M	59.106	BR-FOS11
ECS-B-120	128.18907680	17.53399394	128	11	20.68	17	32	2.38	Art 76 (4)(a)(ii): FOS + 60M	59.695	BR-FOS11; BR-FOS15
ECS-B-121	128.92454320	16.82821749	128	55	28.36	16	49	41.58	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS15; BR-FOS20
ECS-B-122	128.93670640	16.81626715	128	56	12.14	16	48	58.56	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-123	128.94865850	16.80412351	128	56	55.17	16	48	14.84	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-124	128.96039950	16.79178872	128	57	37.44	16	47	30.44	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-125	128.97192260	16.77926706	128	58	18.92	16	46	45.36	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-126	128.98322560	16.76656066	128	58	59.61	16	45	59.62	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-127	128.99430640	16.75367381	128	59	39.5	16	45	13.23	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-128	129.00516030	16.74061080	129	0	18.58	16	44	26.20	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-129	129.01578730	16.72737592	129	0	56.83	16	43	38.55	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-130	129.02618080	16.71397130	129	1	34.25	16	42	50.30	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-131	129.03634080	16.70039908	129	2	10.83	16	42	1.44	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-132	129.04626270	16.68666787	129	2	46.55	16	41	12.00	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-133	129.05594430	16.67277547	129	3	21.4	16	40	21.99	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-134	129.06538330	16.65873268	129	3	55.38	16	39	31.44	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-135	129.07457530	16.64453730	129	4	28.47	16	38	40.33	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-136	129.08352030	16.63019578	129	5	0.67	16	37	48.70	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-137	129.09221600	16.61571460	129	5	31.98	16	36	56.57	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-138	129.10065790	16.60109156	129	6	2.37	16	36	3.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-139	129.10884610	16.58633745	129	6	31.85	16	35	10.81	Art 76 (4)(a)(ii): FOS + 60M	34.955	BR-FOS20
ECS-B-140	129.38574280	16.06602532	129	23	8.67	16	3	57.69	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20; BR-FOS21
ECS-B-141	129.39339640	16.05101529	129	23	36.23	16	3	3.66	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-142	129.40078730	16.03588250	129	24	2.83	16	2	9.18	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-143	129.40791770	16.02063344	129	24	28.5	16	1	14.28	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-144	129.41478080	16.00527241	129	24	53.21	16	0	18.98	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-145	129.42137890	15.98980156	129	25	16.96	15	59	23.29	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-146	129.42770980	15.97422740	129	25	39.76	15	58	27.22	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-147	129.43376890	15.95855206	129	26	1.57	15	57	30.79	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-148	129.43955630	15.94278206	129	26	22.4	15	56	34.02	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-149	129.44506970	15.92691952	129	26	42.25	15	55	36.91	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-150	129.45030920	15.91097097	129	27	1.11	15	54	39.50	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-151	129.45527240	15.89493854	129	27	18.98	15	53	41.78	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-152	129.45995710	15.87883092	129	27	35.85	15	52	43.79	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-153	129.46436560	15.86264809	129	27	51.72	15	51	45.53	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-154	129.46849110	15.84639655	129	28	6.57	15	50	47.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-155	129.47233810	15.83008064	129	28	20.42	15	49	48.29	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-156	129.47590220	15.81370469	129	28	33.25	15	48	49.34	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-157	129.47918330	15.79727304	129	28	45.06	15	47	50.18	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-158	129.48218140	15.78079219	129	28	55.85	15	46	50.85	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-159	129.48489430	15.76426432	129	29	5.62	15	45	51.35	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-160	129.48732200	15.74769376	129	29	14.36	15	44	51.70	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-161	129.48946450	15.73108702	129	29	22.07	15	43	51.91	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-162	129.49131950	15.71444846	129	29	28.75	15	42	52.01	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-163	129.49288930	15.69778242	129	29	34.4	15	41	52.02	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-164	129.49416940	15.68109324	129	29	39.01	15	40	51.94	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-165	129.49516430	15.66438528	129	29	42.59	15	39	51.79	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-166	129.49587170	15.64766287	129	29	45.14	15	38	51.59	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-167	129.49628940	15.63093255	129	29	46.64	15	37	51.36	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-168	129.49642190	15.61419649	129	29	47.12	15	36	51.11	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-169	129.49626470	15.59746340	129	29	46.55	15	35	50.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-170	129.49582010	15.58073329	129	29	44.95	15	34	50.64	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-171	129.49508790	15.56401268	129	29	42.32	15	33	50.45	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-172	129.49407060	15.54730593	129	29	38.65	15	32	50.30	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-173	129.49276360	15.53061741	129	29	33.95	15	31	50.22	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-174	129.49117130	15.51395365	129	29	28.22	15	30	50.23	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-175	129.48929380	15.49731684	129	29	21.46	15	29	50.34	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-176	129.48713110	15.48071134	129	29	13.67	15	28	50.56	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-177	129.48468320	15.46414587	129	29	4.86	15	27	50.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-178	129.48195010	15.44762045	129	28	55.02	15	26	51.43	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-179	129.47893620	15.43114162	129	28	44.17	15	25	52.11	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-180	129.47563720	15.41471375	129	28	32.29	15	24	52.97	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-181	129.47205960	15.39834339	129	28	19.41	15	23	54.04	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-182	129.46820140	15.38203055	129	28	5.52	15	22	55.31	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-183	129.46406460	15.36578398	129	27	50.63	15	21	56.82	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-184	129.45964940	15.34960368	129	27	34.74	15	20	58.57	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-185	129.45495800	15.33350057	129	27	17.85	15	20	0.60	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-186	129.44999030	15.31747248	129	26	59.96	15	19	2.90	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-187	129.44474860	15.30152817	129	26	41.09	15	18	5.50	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-188	129.43923740	15.28566982	129	26	21.25	15	17	8.41	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-189	129.43345230	15.26990400	129	26	0.43	15	16	11.65	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-190	129.42739990	15.25423291	129	25	38.64	15	15	15.24	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-191	129.42108020	15.23866312	129	25	15.89	15	14	19.19	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-192	129.41449560	15.22319465	129	24	52.18	15	13	23.50	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-193	129.40764820	15.20783625	129	24	27.53	15	12	28.21	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-194	129.40053800	15.19259012	129	24	1.94	15	11	33.32	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-195	129.39316730	15.17746284	129	23	35.4	15	10	38.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-196	129.38554060	15.16245442	129	23	7.95	15	9	44.84	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-197	129.37765790	15.14757144	129	22	39.57	15	8	51.26	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-198	129.36952140	15.13281830	129	22	10.28	15	7	58.15	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-199	129.36113570	15.11819938	129	21	40.09	15	7	5.52	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-200	129.35250060	15.10371690	129	21	9	15	6	13.38	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-201	129.34362080	15.08937524	129	20	37.03	15	5	21.75	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-202	129.33449610	15.07518099	129	20	4.19	15	4	30.65	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-203	129.32512890	15.06113417	129	19	30.46	15	3	40.08	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-204	129.31552590	15.04724137	129	18	55.89	15	2	50.07	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-205	129.30568710	15.03350479	129	18	20.47	15	2	0.62	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-206	129.29561480	15.01992884	129	17	44.21	15	1	11.74	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-207	129.28531110	15.00652010	129	17	7.12	15	0	23.47	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-208	129.27478290	14.99327640	129	16	29.22	14	59	35.80	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-209	129.26402780	14.98020653	129	15	50.5	14	58	48.74	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-210	129.25305260	14.96731051	129	15	10.99	14	58	2.32	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-211	129.24185960	14.95459492	129	14	30.69	14	57	16.54	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-212	129.23045100	14.94206198	129	13	49.62	14	56	31.42	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-213	129.21883130	14.92971391	129	13	7.79	14	55	46.97	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-214	129.20700270	14.91755511	129	12	25.21	14	55	3.20	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-215	129.19496750	14.90558998	129	11	41.88	14	54	20.12	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-216	129.18273250	14.89382074	129	10	57.84	14	53	37.75	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-217	129.17029530	14.88224960	129	10	13.06	14	52	56.10	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-218	129.15766500	14.87088096	129	9	27.59	14	52	15.17	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-219	129.14484380	14.85971923	129	8	41.44	14	51	34.99	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-220	129.13183390	14.84876663	129	7	54.6	14	50	55.56	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-221	129.11863990	14.83802318	129	7	7.1	14	50	16.88	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-222	129.10526400	14.82749547	129	6	18.95	14	49	38.98	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-223	129.09171070	14.81718573	129	5	30.16	14	49	1.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-224	129.07798440	14.80709616	129	4	40.74	14	48	25.55	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-225	129.06408970	14.79722898	129	3	50.72	14	47	50.02	Art 76 (4)(a)(ii): FOS + 60M	58.685	BR-FOS21
ECS-B-226	128.24611111	14.22289444	128	14	46.00	14	13	22.42		N/A	BR-FOS21

ANNEX II

LIST OF THE MATERIAL CONTAINED IN THE ORIGINAL SUBMISSION OF THE PHILIPPINES MADE TO THE COMMISSION ON 8 APRIL 2009 AND REVISED ON 17 JUNE 2009

1. Executive summary of the Submission of the Philippines was submitted in 22 copies in paper format and two copies in electronic format.
2. Main Body of the Submission of the Philippines was submitted in eight copies as a text and figures document in paper format and two copies in electronic format.
3. The supporting data of the Submission of the Philippines was submitted with five volumes of references and 3 volumes of supporting documentation in 2 copies in paper format, where appropriate, and electronic format. Additional documentation, scientific data including bathymetric data, maps and GIS data was also supplied in electronic format.

ANNEX III

LIST OF ADDITIONAL MATERIAL SUBMITTED TO THE COMMISSION BY THE PHILIPPINES

I. 25 August 2009
   1. Opening Statement of H. E. Mr. Hilario G. Davide, Jr.
   2. The Philippines' Partial Submission for an Extended Continental Shelf in the Benham Rise Region under Article 76 of the 1982 UNCLOS, Speaking Notes.

II. 20 April 2011
   1. Activation instructions for Manifold GIS.

III. 15 July 2011:
   1. Response of the Republic of the Philippines to the Presentation of the Subcommission to the Philippine Delegation, Response to the letter of the Subcommission dated 16 May 2011, RP-BR-R1;
   2. Additional bathymetric data on the Benham Rise Region;
   3. Amended texts of Executive Summary and Main Body.

IV. 30 August 2011:
   1. Response to the Preliminary Considerations of the CLCS Subcommission, RP-BR-R2;
   2. Script for the Presentation of the Response to the Preliminary Considerations of the CLCS Subcommission.

V. 2 September 2011:
   1. Preliminary Response to the Subcommission.

VI. 27 October 2011:
   1. Response of the Republic of the Philippines to the Presentation of the Subcommission to the Philippine Delegation, Response to the 2 September 2011 Presentation of the Subcommission, RP-BR-R3.

VII. 6 December 2011:
   1. Response to the Presentation of the Subcommission to the Philippines on 2 September 2011 on the Location of FOS 23;
   2. Opening Statement by the Head of the Delegation, Usec. Tiangco.

VIII. 7 December 2011:
   1. Response and Request for Clarification by the Philippine Delegation, RP-BR-R4.

IX. 8 December 2011:
   1. Response to the Presentation of the Subcommission to the Philippines on 7 December 2011;
   2. Response of the Republic of the Philippines to the Presentation of the Subcommission for Consideration of the Submission in the Benham Rise Region, RP-BR-R5;
   3. Tables of Outer Limit Fixed Points.

X. 9 December 2011:
   1. Response of the Republic of the Philippines to the Subcommission for Consideration of the Submission in the Benham Rise Region Pertaining to the Distances Between Fixed Points ECS-B-233 and ECS-B-234, RP-BR-R6.

XI. 29 March 2012:

1. Comments of the Republic of the Philippines on the Views and General Conclusions of the Subcommission for Consideration of the Submission of the Philippines in the Benham Rise Region, RP-BR-R7;
2. Tables of Outer Limit Fixed Points.

XII. 12 April 2012:

1. Presentation of the Republic of the Philippines to the Commission on the Limits of the Continental Shelf with respect to the Submission on the Benham Rise Region;
2. Final Presentation of the Republic of the Philippines to the Commission on the Limits of the Continental Shelf with respect to the Submission on the Benham Rise Region, RP-BR-R8.

ANNEX IV

LIST OF DOCUMENTS SUPPLIED TO THE DELEGATION BY THE SUBCOMMISSION

I. 16 May 2011:
   1. Preliminary considerations, SCPHL_DOC_PHL_001_16_05_2011.pdf.

II. 2 September 2011:
   1. Presentation to the Philippine Delegation, SCPHL_DOC_PHL_002_02_09_2011.pdf.

III. 7 December 2011:
   1. Presentation to the Philippine Delegation, SCPHL_DOC_PHL_003_07_12_2011.pdf.

IV. 9 December 2011:
   1. Response to request for clarification by the Philippine Delegation made on 7 December 2011, SCPHL_DOC_PHL_004_09_12_2011.pdf.

V. 9 December 2011:
   1. Response of the Subcommission to the presentation made by the Philippine Delegation on 8 December 2011, SCPHL_DOC_PHL_005_09_12_2011.pdf.

ANNEX V

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United Nations Convention on the Law of the Sea

Commission on the Limits of the Continental Shelf

SUMMARY OF RECOMMENDATIONS OF THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF IN REGARD TO THE SUBMISSION MADE BY THE PHILIPPINES IN RESPECT OF THE BENHAM RISE REGION ON 8 APRIL 2009[1]

Recommendations prepared by the Subcommission established for the consideration of the Submission made by the Philippines

Adopted by the Subcommission on 2 April 2012, and submitted to the Commission on the Limits of the Continental Shelf for consideration and approval by the Commission

Adopted by the Commission on 12 April 2012

[1] The aim of this Summary is to provide information which is not of confidential or proprietary nature in order to facilitate the function of the Secretary-General in accordance with Rule 11.3 of Annex III to the Rules of Procedure of the Commission(CLCS/40/Rev.1). This Summary is based on excerpts of the Recommendations and may refer to material not necessarily included either in the full Recommendations or this Summary.

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I. INTRODUCTION

1 On 8 April 2009, the Republic of the Philippines ("the Philippines") submitted to the Commission on the Limits of the Continental Shelf through the Secretary-General of the United Nations, information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, in accordance with article 76, paragraph 8 of the United Nations Convention on the Law of the Sea of 10 December 1982. The Convention entered into force for the Philippines on 16 November 1994.

II. GENERAL PRINCIPLES ON WHICH THESE RECOMMENDATIONS ARE BASED

2 The Recommendations of the Commission are based on the scientific and technical data and other material provided by the Philippines in relation to the implementation of article 76. The Recommendations of the Commission only deal with issues related to article 76 and Annex II to the Convention and are without prejudice to matters relating to delimitation between States, or application of other parts of the Convention or any other treaties.

III. RECOMMENDATIONS

1. Geographical and geological description of the region

3 The continental margin of the Philippines in the Benham Rise Region is bounded to the north and east by the West Philippine Basin, and to the west and south by the Philippine island of Luzon.

4 The Benham Rise region consists of the Benham Rise itself, Molave Spur, Molave Saddle, Narra Spur and Narra Saddle (Figure 1). The Benham Rise is connected to the Philippine archipelago along Bicol Saddle to the southwest and Palanan Saddle to the east.

5 The Benham Rise, Molave Spur and Narra Spur constitute a volcanic plateau which stands about 3,500 m above the surrounding seafloor at its crest and about 500 m above the surrounding seafloor along its northern and eastern margins. To the west and southwest, it is connected with the eastern margin of Luzon through the Palanan and Bicol saddles, respectively. The Benham Rise was formed about 37 Ma by intraplate igneous activity resulting in significantly thicker crust than that of the deep ocean floor of the West Philippine Basin. The Benham Rise was accreted to Luzon about 20 Ma along a fossil subduction zone at the East Luzon margin.

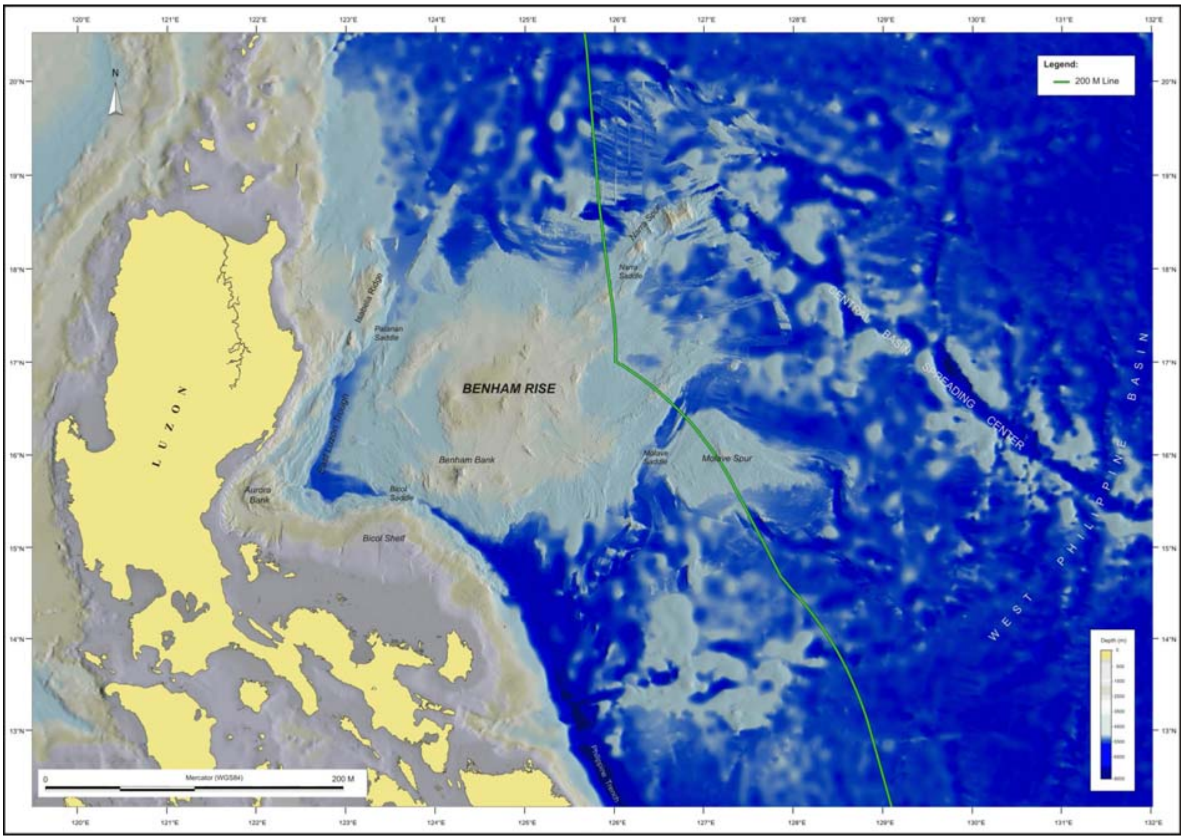

Figure 1. Benham Rise Region with the 200 M limit of the Philippines (Source: Figure 2.9 of the Main Body)

2. Notes verbales submitted by other States

6 The Commission received no notes verbales from other States in relation to the Submission.

3. Submerged prolongation of the land mass and entitlement to the continental shelf beyond 200 M

7 The Philippine islands, including Luzon, constitute the land mass in the region. The Benham Rise and its subsidiaries, the Molave and Narra spurs, form a composite morphological feature that constitutes the submarine prolongation of that land mass by way of the FOS envelope.

8 The outer edge of the continental margin, established from the FOS of the Benham Rise Region by applying the provisions of article 76, paragraph 4, of the Convention, extends beyond the 200 M limits of the Philippines. On this basis, the Commission recognises the legal entitlement of the Philippines to delineate the outer limits of its continental shelf beyond its 200 M limits in this region.

4. The determination of the foot of the continental slope

9 The FOS should be established in accordance with article 76, paragraph 4(b), of the Convention.

4.1 <u>Considerations</u>

10 The Philippines originally submitted eight critical FOS points that generate formula points beyond the 200 M limits of the Philippines in the Benham Rise Region, BR-FOS-7, -9, -10, -11, -15, -20, -21 and -23.

11 The base of the slope zone (BOS) in which these FOS points were established, was determined by the Philippines on the basis of morphology of the flanks of the Benham Rise and its subsidiaries, the Narra and Molave spurs.

12 The Commission agrees with the Philippines that the continental rise is absent in this region and therefore, the BOS is located where the lower slope merges with the deep ocean floor. In the view of the Subcommission, the BOS is generally easily identified on the basis of morphology. On this basis, the Subcommission agreed with the locations of the FOS points BR-FOS-9, -10, -11, -15, -20 and -21. However, it did not agree with the FOS points BR-FOS-7 and -23.

13 In its communication SCPHL_DOC_PHL_001_16_05_2011, the Subcommission expressed the view that the location of BR-FOS-7 on the profile submitted (Figure 2) had been compromised by the way the slope had been averaged. The line of the average slope seemed to place the FOS point away from the real base of the slope. Hence, the Subcommission was of the view that the maximum change in gradient on this profile occurs at a point more landward (approximate distance of about 780 m) of the position of the FOS point identified by the Philippines (Figure 3).

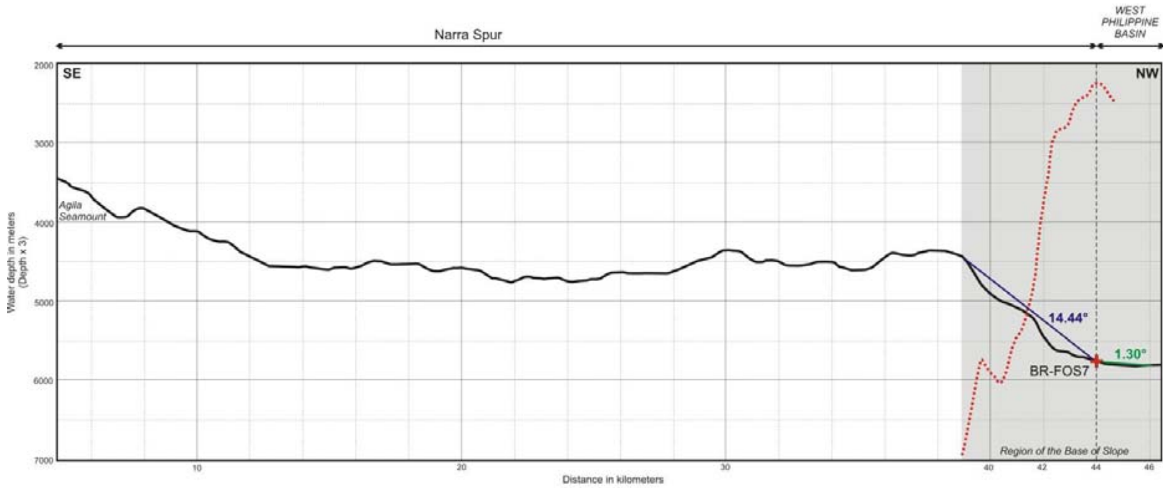

Figure 2. Bathymetric profile PR-BR7 (Source: Annex 4.2.2 of the Supporting Document)

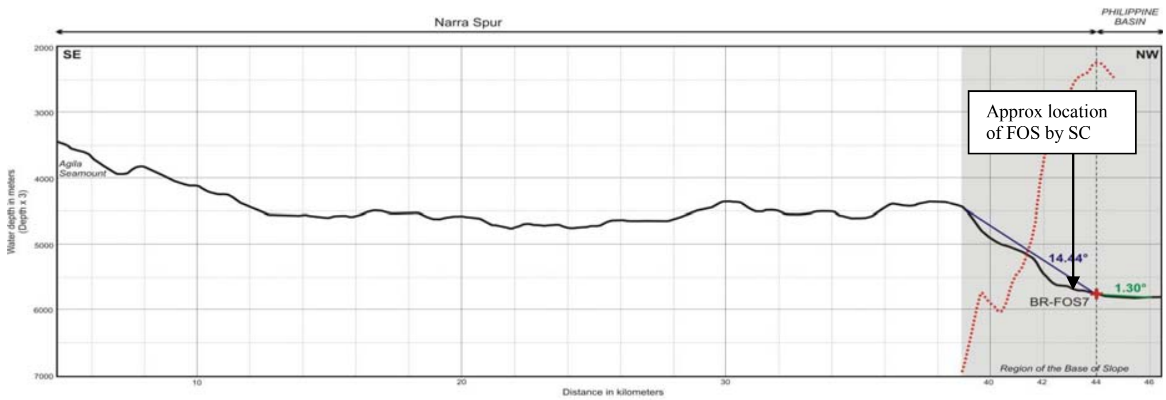

Figure 3. Bathymetric profile PR-BR7 indicating maximum change of gradient in base of slope zone (Source: Modified from Annex 4.2.2 of the Supporting Document)

14 In its response RP-BR-R2 the Philippines identified a revised location for the point BR-FOS-7 in accordance with the view of the Subcommission. The Commission agrees with this location.

15 The FOS point BR-FOS-23 was located at the seaward end of an elevated feature separated from the Molave Spur by a low-lying area which was, in the view of the Philippines is a saddle connecting it to the Molave Spur (Figures 4a and b). In its communication SCPHL_DOC_PHL_002_02_09_2011 the Subcommission expressed the view that the base of slope is approximately at 5,000 to 5,100 m depth in this area (Figure 5) with the result that this low-lying area is part of the deep ocean floor. Consequently, the elevated feature is not a part of the submerged prolongation of the Molave Spur. The Subcommission therefore asked that point BR-FOS-23 be replaced by a new FOS point.

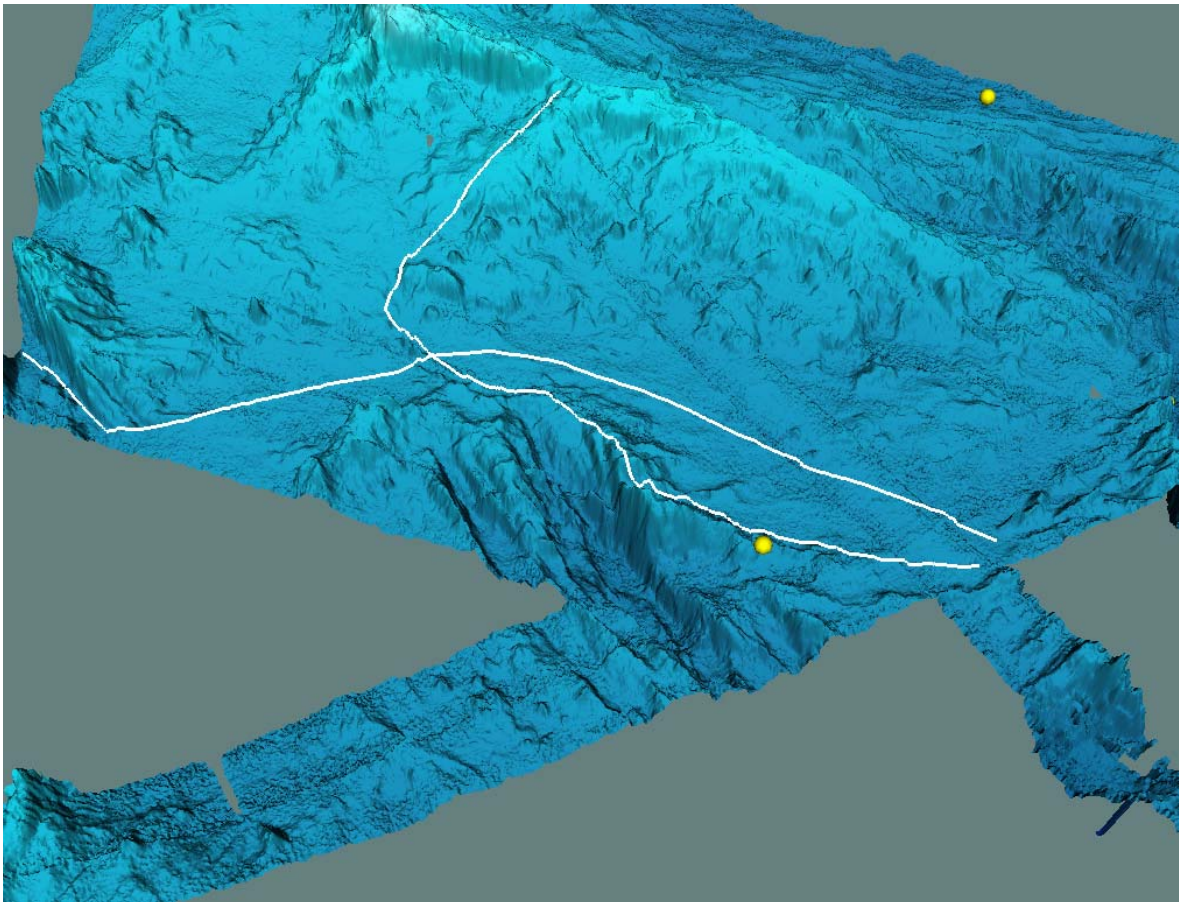

Figure 4a. Location of profile from Molave Spur along crest of saddle and through BR-FOS-23, and profile along saddle. (Figure created by Subcommission from materials provided by Delegation)

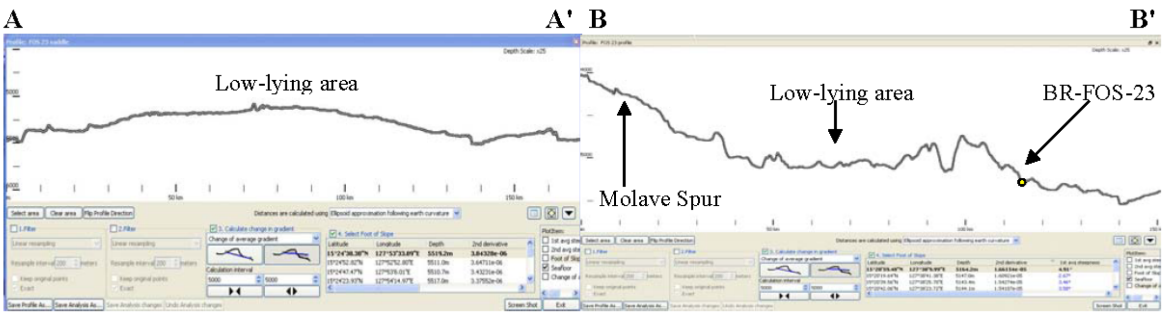

Figure 4b. Profile along low-lying area, left. Profile from Molave Spur along crest of low-lying area and through BR-FOS-23, right. (Figure created by Subcommission from materials provided by Delegation)

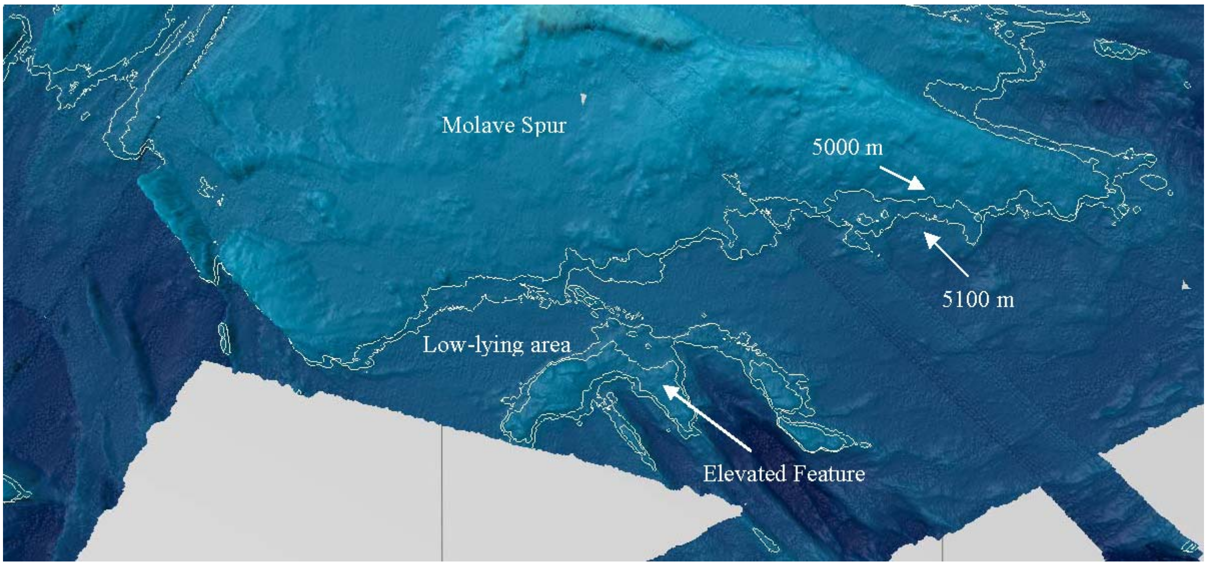

Figure 5. 5,000 and 5,100 m isobaths around the Molave Spur and the elevated feature. (Figure created by Subcommission from materials provided by Delegation)

16 After a series of interactions between the Subcommission and the Delegation of the Philippines, the Philippines submitted a revised method of bridging the formula line and the 200 M line. By this method, the last fixed point on the 60 M arc, generated from BR-FOS-21, was joined to the 200 M limit by the line of shortest distance, not longer than 60 M. In this way, FOS point BR-FOS-23 became redundant with respect to the establishment of the outer limit, and no longer counts as a critical FOS point. The Subcommission agreed with this approach in its Communication SCPHL_LET_PHL_005_09_12_2011.

17 Following this agreed approach, the Delegation of the Philippines also submitted a revised bridging with the northern 200 M line of the Philippines based on the same principle. By doing so, the FOS points BR-FOS-7 and -9 became redundant with respect to the establishment of the outer limit, and no longer count as critical FOS points. The Subcommission agreed with this approach.

18 As a result of the examination and consideration of the material and information originally submitted together with those provided during the interactions with the Delegation of the Philippines, the Subcommission agreed with the location of the points BR-FOS-7 (as revised), -9, -10, -11, -15, -20 and -21, of which BR-FOS-10, -11, -15, -20 and -21 are critical FOS points.

4.2 Recommendations

19 The Commission concludes that, in the Benham Rise Region, the five critical FOS points referred to above and listed in Table 1 of Annex I, fulfil the requirements of article 76 and Chapter 5 of the Guidelines. The Commission recommends that these FOS points should form the basis for the establishment of the outer edge of the continental margin in the Benham Rise Region.

5. The establishment of the outer edge of the continental margin

20 The outer edge of the continental margin of the Philippines in the Benham Rise Region should, for the purposes of the Convention, be established in accordance with article 76, paragraphs 4 and 7, of the Convention.

5.1 The application of the 60 M distance formula

21 For the purpose of establishing the outer edge of the continental margin in the Benham Rise Region, fixed points were determined on arcs constructed at a distance of not more than 60 M from FOS points on the continental margin of the Benham Rise Region, in accordance with the provision contained in article 76, paragraph 4(a)(ii), of the Convention. These points are listed in Table 1, Annex I.

22 The Commission agrees with the way these points have been established in the Benham Rise Region by the Philippines.

5.2 Recommendations

23 In the Benham Rise Region, the outer edge of the continental margin beyond 200 M is based on points on the 60 M arcs as described in section 5.1, in accordance with article 76, paragraph 7, of the Convention. The Commission recommends that these points be used as the basis for delineating the outer limits of the continental margin in this region.

6. The delineation of the outer limits of the continental shelf

24 The outer limits of the continental shelf should be based on the established outer edge of the continental margin, taking into consideration the constraints contained in article 76, paragraphs 5 and 6, of the Convention.

6.1 The application of constraint criteria

25 The outer limits of the continental shelf cannot extend beyond the constraints as per the provisions contained in article 76, paragraph 5, of the Convention. Accordingly, the provision that the outer limits of the continental shelf may not exceed 350 M from the baselines from which the breadth of the territorial sea is measured may be applied in all cases. Alternatively, the provision that the outer limits of the continental shelf may not exceed 100 M from the 2,500 m isobath may be applied to those parts of the continental margin that are classified as natural components of that margin.

26 For the outer limits of the continental shelf in the Benham Rise Region, the Philippines has invoked the FOS plus 60 M criteria with the result that no part of the outer limits exceeds any of the constraints.

6.1.1 The construction of the distance constraint line

27 The distance constraint line submitted by the Philippines is constructed by arcs at 350 M distance from the baselines from which the breadth of the territorial sea of the Philippines is measured. The Commission agrees with the procedure and methods applied by the Philippines in the construction of this constraint line (Figure 6).

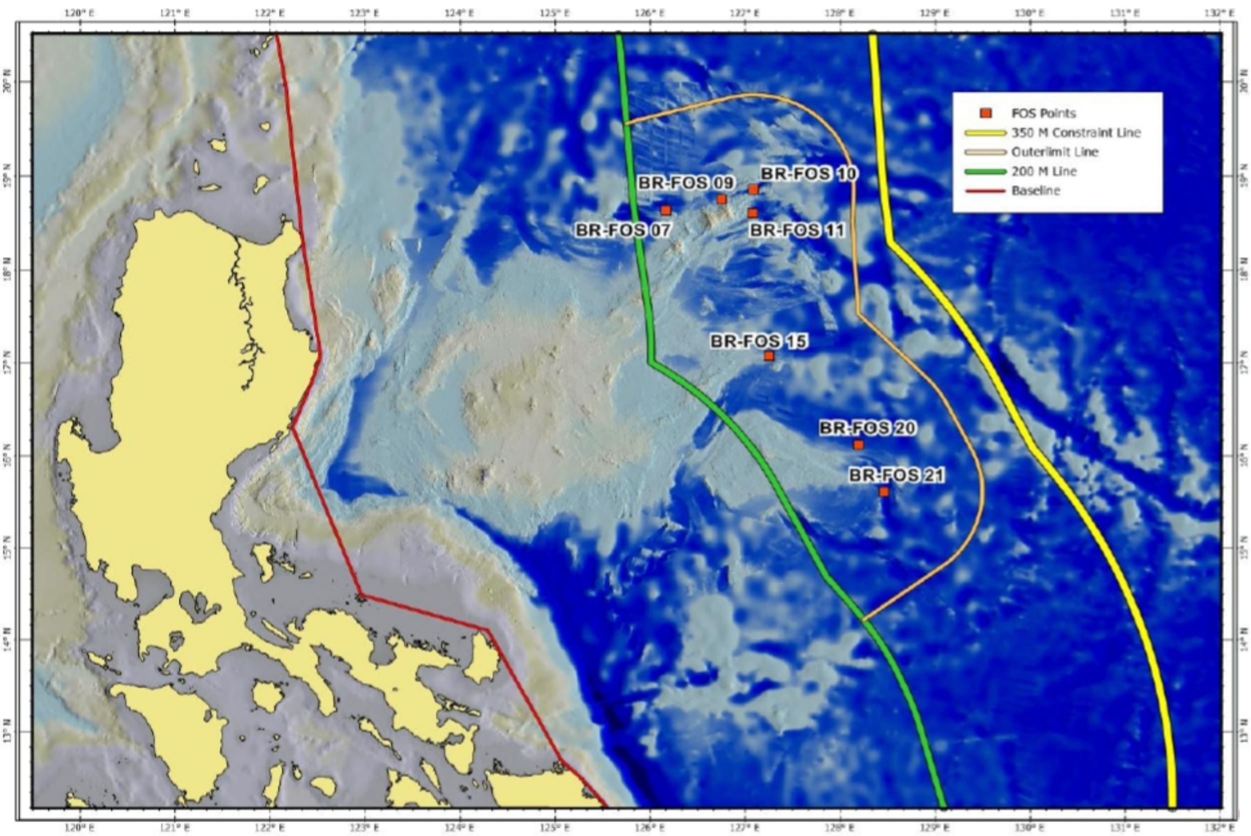

Figure 6. Location of the distance constraint line (yellow) and the outer limits of the continental shelf (pale orange) (Source: Presentation, Response to the Presentation of the Subcommission to the Philippines on 7 December 2011, slide 6)

6.2 The outer limits of the continental shelf

28 The outer limits of the continental shelf in the Benham Rise Region as contained in the Submission of the Philippines consists of fixed points connected by straight lines not exceeding 60 M in length (Figure 6). The fixed points are listed in Table 2, Annex I, as submitted under letter of 28 March 2012. The fixed points are established by the provisions contained in article 76, paragraph 4(a), of the Convention, and points located on the 200 M limit line of the Philippines north of Narra Spur and south of Molave Spur.

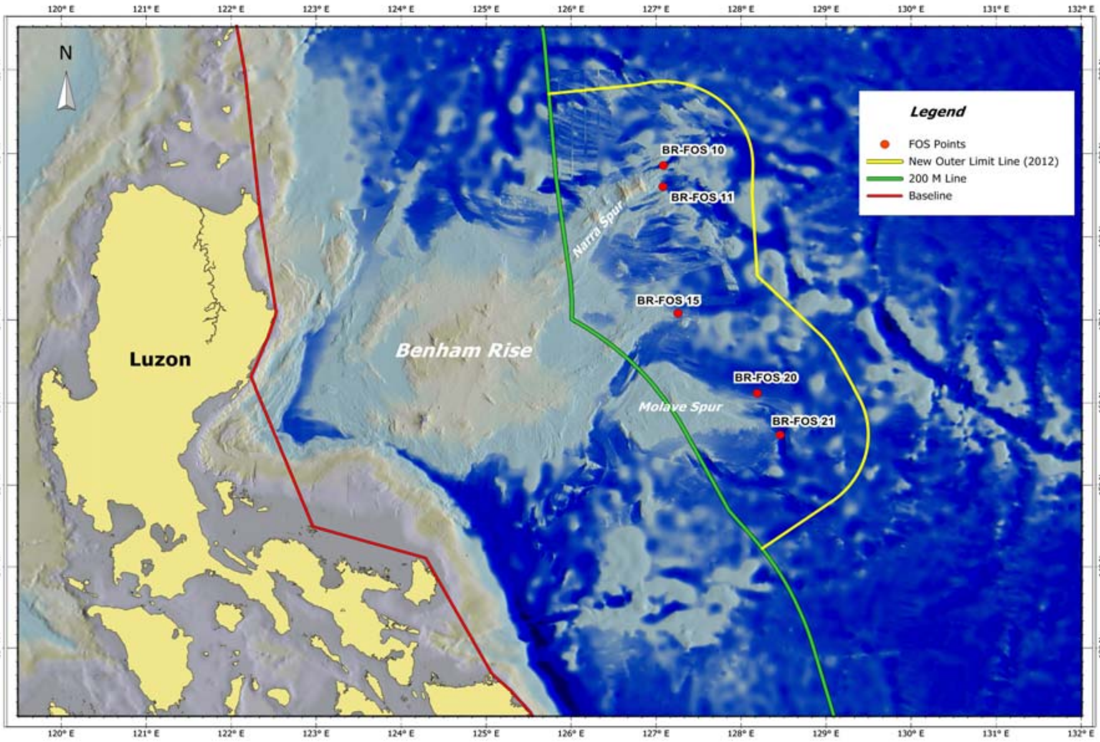

Figure 7. Map of the outer limits of the continental shelf beyond 200 M of the Philippines in the Benham Rise Region. (Source: Document RP-BR-R7 submitted under letter of 28 March 2012)

29 The Commission agrees that the determination of the last segment of the outer limits of the continental shelf may be established either by the intersection of the formula line, in accordance with Article 76, paragraph 4 and 7, and the 200 M limit from the archipelagic baselines from which the breadth of the territorial sea is measured, or by the line of shortest distance, not exceeding 60 M in length, between the last fixed formula point and the 200 M limit.

6.3 Recommendations

30 The Commission recommends that the delineation of the outer limits of the continental shelf in the Benham Rise Region be conducted in accordance with paragraph 7 of article 76, of the Convention by straight lines not exceeding 60 M in length, connecting fixed points, defined by coordinates of latitude and longitude. Further, the Commission agrees with the principles applied in delineating the outer limits of the continental shelf in the Benham Rise Region, including the determination of the fixed points listed in Table 2, Annex I, and the construction of the straight lines connecting those points. The Commission recommends that the Philippines proceed to establish the outer limits of the continental shelf accordingly.

ANNEX I

TABLE 1. GEOGRAPHIC COORDINATES OF AGREED CRITICAL FOS POINTS

CRITICAL FOS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)		
			DEG	MIN	SEC	DEG	MIN	SEC
BR-FOS10	127.08514404	18.85784912	127	5	6.52	18	51	28.26
BR-FOS11	127.07955278	18.60366111	127	4	46.39	18	36	13.18
BR-FOS15	127.25640869	17.08072090	127	15	23.07	17	4	50.60
BR-FOS20	128.18887329	16.11800957	128	11	19.94	16	7	4.83
BR-FOS21	128.46021940	15.61249444	128	27	36.79	15	36	44.98

TABLE 2. GEOGRAPHIC COORDINATES AND OTHER INFORMATION RELATED TO THE ESTABLISHMENT OF THE OUTER LIMITS OF THE CONTINENTAL SHELF BEYOND 200 M IN THE BENHAM RISE REGION[1]

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-001	125.73723154	19.71376345	125	44	14.03	19	42	49.55		59.852	BR-FOS10
ECS-B-002	126.78879188	19.82145761	126	47	19.65	19	49	17.25	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-003	126.80579698	19.82602277	126	48	20.87	19	49	33.68	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-004	126.82288070	19.83032001	126	49	22.37	19	49	49.15	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-005	126.84004080	19.83434512	126	50	24.15	19	50	3.64	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-006	126.85726820	19.83809811	126	51	26.17	19	50	17.15	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-007	126.87456080	19.84157475	126	52	28.42	19	50	29.67	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-008	126.89191170	19.84477931	126	53	30.88	19	50	41.21	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-009	126.90931880	19.84770756	126	54	33.55	19	50	51.75	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-010	126.92677540	19.85035739	126	55	36.39	19	51	1.29	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-011	126.94427680	19.85273094	126	56	39.4	19	51	9.83	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-012	126.96181640	19.85482821	126	57	42.54	19	51	17.38	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-013	126.97939190	19.85664498	126	58	45.81	19	51	23.92	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-014	126.99699890	19.85818337	126	59	49.2	19	51	29.46	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-015	127.01462830	19.85944127	127	0	52.66	19	51	33.99	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10

[1] The continental margin is defined by fixed points ECS-B-002 to ECS-B-225.

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-016	127.03228020	19.86042080	127	1	56.21	19	51	37.51	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-017	127.04994560	19.86111987	127	2	59.8	19	51	40.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-018	127.06762000	19.86153632	127	4	3.43	19	51	41.53	Art 76 (4)(a)(ii): FOS + 60M	0.991	BR-FOS10
ECS-B-019	127.08514380	19.86167444	127	5	6.52	19	51	42.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-020	127.10282490	19.86153420	127	6	10.17	19	51	41.52	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-021	127.12049930	19.86111349	127	7	13.8	19	51	40.01	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-022	127.13816470	19.86041231	127	8	17.39	19	51	37.48	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-023	127.15581660	19.85943064	127	9	20.94	19	51	33.95	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-024	127.17344600	19.85817062	127	10	24.41	19	51	29.41	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-025	127.19105070	19.85663010	127	11	27.78	19	51	23.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-026	127.20862630	19.85481121	127	12	31.05	19	51	17.32	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-027	127.22616810	19.85271181	127	13	34.21	19	51	9.76	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-028	127.24366730	19.85033614	127	14	37.2	19	51	1.21	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-029	127.26112380	19.84768206	127	15	40.05	19	50	51.66	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-030	127.27853090	19.84475169	127	16	42.71	19	50	41.11	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-031	127.29588190	19.84154500	127	17	45.17	19	50	29.56	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-032	127.31317220	19.83806623	127	18	47.42	19	50	17.04	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-033	127.33039960	19.83431112	127	19	49.44	19	50	3.52	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-034	127.34755750	19.83028389	127	20	51.21	19	49	49.02	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-035	127.36464120	19.82598451	127	21	52.71	19	49	33.54	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-036	127.38164630	19.82141511	127	22	53.93	19	49	17.09	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-037	127.39856830	19.81657564	127	23	54.85	19	48	59.67	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-038	127.41540050	19.81147035	127	24	55.44	19	48	41.29	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-039	127.43213830	19.80609707	127	25	55.7	19	48	21.95	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-040	127.44877960	19.80046002	127	26	55.61	19	48	1.66	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-041	127.46531760	19.79455919	127	27	55.14	19	47	40.41	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-042	127.48174780	19.78839667	127	28	54.29	19	47	18.23	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-043	127.49806570	19.78197455	127	29	53.04	19	46	55.11	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-044	127.51426910	19.77529493	127	30	51.37	19	46	31.06	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-045	127.53034890	19.76835990	127	31	49.26	19	46	6.10	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-046	127.54630300	19.76116942	127	32	46.69	19	45	40.21	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-047	127.56212900	19.75372772	127	33	43.66	19	45	13.42	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-048	127.57781810	19.74603476	127	34	40.15	19	44	45.73	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-049	127.59337020	19.73809476	127	35	36.13	19	44	17.14	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-050	127.60877630	19.72990979	127	36	31.59	19	43	47.68	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-051	127.62403640	19.72147984	127	37	26.53	19	43	17.33	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-052	127.63914390	19.71281124	127	38	20.92	19	42	46.12	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-053	127.65409630	19.70390181	127	39	14.75	19	42	14.05	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-054	127.66888710	19.69475791	127	40	7.99	19	41	41.13	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-055	127.68351170	19.68537950	127	41	0.64	19	41	7.37	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-056	127.69797000	19.67577290	127	41	52.69	19	40	32.78	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-057	127.71225550	19.66593597	127	42	44.12	19	39	57.37	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-058	127.72636350	19.65587290	127	43	34.91	19	39	21.14	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-059	127.74028970	19.64559003	127	44	25.04	19	38	44.12	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-060	127.75403160	19.63508733	127	45	14.51	19	38	6.31	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-061	127.76758720	19.62436689	127	46	3.31	19	37	27.72	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-062	127.78094970	19.61343290	127	46	51.42	19	36	48.36	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-063	127.79411450	19.60228959	127	47	38.81	19	36	8.24	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-064	127.80708170	19.59093692	127	48	25.49	19	35	27.37	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-065	127.81984450	19.57938121	127	49	11.44	19	34	45.77	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-066	127.83240070	19.56762457	127	49	56.64	19	34	3.45	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-067	127.84474580	19.55567120	127	50	41.08	19	33	20.42	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-068	127.85687980	19.54352318	127	51	24.77	19	32	36.68	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-069	127.86879590	19.53118474	127	52	7.67	19	31	52.27	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-070	127.88048970	19.51865796	127	52	49.76	19	31	7.17	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-071	127.89196120	19.50594919	127	53	31.06	19	30	21.42	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-072	127.90320590	19.49305837	127	54	11.54	19	29	35.01	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-073	127.91422150	19.47999186	127	54	51.2	19	28	47.97	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-074	127.92500350	19.46675175	127	55	30.01	19	28	0.31	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-075	127.93554970	19.45334225	127	56	7.98	19	27	12.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-076	127.94585790	19.43976972	127	56	45.09	19	26	23.17	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-077	127.95592350	19.42603198	127	57	21.32	19	25	33.72	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-078	127.96574430	19.41213964	127	57	56.68	19	24	43.70	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-079	127.97532040	19.39809054	127	58	31.15	19	23	53.13	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-080	127.98464490	19.38389316	127	59	4.72	19	23	2.02	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-081	127.99371790	19.36954960	127	59	37.38	19	22	10.38	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-082	128.00253490	19.35506407	128	0	9.13	19	21	18.23	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-083	128.01109580	19.34044081	128	0	39.94	19	20	25.59	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-084	128.01939850	19.32568404	128	1	9.83	19	19	32.46	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-085	128.02743840	19.31079799	128	1	38.78	19	18	38.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-086	128.03521330	19.29578476	128	2	6.77	19	17	44.83	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-087	128.04272550	19.28065285	128	2	33.81	19	16	50.35	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-088	128.04996590	19.26540222	128	2	59.88	19	15	55.45	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-089	128.05693910	19.25003710	128	3	24.98	19	15	0.13	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-090	128.06364050	19.23456601	128	3	49.11	19	14	4.44	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-091	128.07006570	19.21899104	128	4	12.24	19	13	8.37	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-092	128.07621690	19.20331430	128	4	34.38	19	12	11.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-093	128.08209190	19.18754429	128	4	55.53	19	11	15.16	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-094	128.08768840	19.17168100	128	5	15.68	19	10	18.05	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-095	128.09300420	19.15573292	128	5	34.82	19	9	20.64	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-096	128.09803920	19.13970218	128	5	52.94	19	8	22.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-097	128.10279130	19.12359301	128	6	10.05	19	7	24.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-098	128.10726040	19.10741181	128	6	26.14	19	6	26.68	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-099	128.11144210	19.09116068	128	6	41.19	19	5	28.18	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-100	128.11533850	19.07484601	128	6	55.22	19	4	29.45	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-101	128.11894750	19.05847207	128	7	8.21	19	3	30.50	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-102	128.12226910	19.04204309	128	7	20.17	19	2	31.36	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-103	128.12530310	19.02556334	128	7	31.09	19	1	32.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-104	128.12804520	19.00903708	128	7	40.96	19	0	32.53	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-105	128.13049760	18.99247071	128	7	49.79	18	59	32.89	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-106	128.13265810	18.97586848	128	7	57.57	18	58	33.13	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-107	128.13452880	18.95923252	128	8	4.3	18	57	33.24	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-108	128.13610540	18.94256925	128	8	9.98	18	56	33.25	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-109	128.13739220	18.92588505	128	8	14.61	18	55	33.19	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-110	128.13838480	18.90918207	128	8	18.19	18	54	33.06	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-111	128.13908550	18.89246457	128	8	20.71	18	53	32.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-112	128.13949200	18.87573898	128	8	22.17	18	52	32.66	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-113	128.13960650	18.85900741	128	8	22.58	18	51	32.43	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10
ECS-B-114	128.13942910	18.84227844	128	8	21.94	18	50	32.20	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-115	128.13895750	18.82555419	128	8	20.25	18	49	32.00	Art 76 (4)(a)(ii): FOS + 60M	15.195	BR-FOS10
ECS-B-116	128.13179570	18.57140926	128	7	54.46	18	34	17.07	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS10; BR-FOS11
ECS-B-117	128.13103440	18.55469433	128	7	51.72	18	33	16.90	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS11
ECS-B-118	128.12998330	18.53799272	128	7	47.94	18	32	16.77	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS11
ECS-B-119	128.12863810	18.52131090	128	7	43.1	18	31	16.72	Art 76 (4)(a)(ii): FOS + 60M	59.106	BR-FOS11
ECS-B-120	128.18907680	17.53399394	128	11	20.68	17	32	2.38	Art 76 (4)(a)(ii): FOS + 60M	59.695	BR-FOS11; BR-FOS15
ECS-B-121	128.92454320	16.82821749	128	55	28.36	16	49	41.58	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS15; BR-FOS20
ECS-B-122	128.93670640	16.81626715	128	56	12.14	16	48	58.56	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-123	128.94865850	16.80412351	128	56	55.17	16	48	14.84	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-124	128.96039950	16.79178872	128	57	37.44	16	47	30.44	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-125	128.97192260	16.77926706	128	58	18.92	16	46	45.36	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-126	128.98322560	16.76656066	128	58	59.61	16	45	59.62	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-127	128.99430640	16.75367381	128	59	39.5	16	45	13.23	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-128	129.00516030	16.74061080	129	0	18.58	16	44	26.20	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-129	129.01578730	16.72737592	129	0	56.83	16	43	38.55	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-130	129.02618080	16.71397130	129	1	34.25	16	42	50.30	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-131	129.03634080	16.70039908	129	2	10.83	16	42	1.44	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-132	129.04626270	16.68666787	129	2	46.55	16	41	12.00	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-133	129.05594430	16.67277547	129	3	21.4	16	40	21.99	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-134	129.06538330	16.65873268	129	3	55.38	16	39	31.44	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-135	129.07457530	16.64453730	129	4	28.47	16	38	40.33	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-136	129.08352030	16.63019578	129	5	0.67	16	37	48.70	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-137	129.09221600	16.61571460	129	5	31.98	16	36	56.57	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-138	129.10065790	16.60109156	129	6	2.37	16	36	3.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20
ECS-B-139	129.10884610	16.58633745	129	6	31.85	16	35	10.81	Art 76 (4)(a)(ii): FOS + 60M	34.955	BR-FOS20
ECS-B-140	129.38574280	16.06602532	129	23	8.67	16	3	57.69	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS20; BR-FOS21
ECS-B-141	129.39339640	16.05101529	129	23	36.23	16	3	3.66	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-142	129.40078730	16.03588250	129	24	2.83	16	2	9.18	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-143	129.40791770	16.02063344	129	24	28.5	16	1	14.28	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-144	129.41478080	16.00527241	129	24	53.21	16	0	18.98	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-145	129.42137890	15.98980156	129	25	16.96	15	59	23.29	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-146	129.42770980	15.97422740	129	25	39.76	15	58	27.22	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-147	129.43376890	15.95855206	129	26	1.57	15	57	30.79	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-148	129.43955630	15.94278206	129	26	22.4	15	56	34.02	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-149	129.44506970	15.92691952	129	26	42.25	15	55	36.91	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-150	129.45030920	15.91097097	129	27	1.11	15	54	39.50	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-151	129.45527240	15.89493854	129	27	18.98	15	53	41.78	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-152	129.45995710	15.87883092	129	27	35.85	15	52	43.79	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-153	129.46436560	15.86264809	129	27	51.72	15	51	45.53	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-154	129.46849110	15.84639655	129	28	6.57	15	50	47.03	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-155	129.47233810	15.83008064	129	28	20.42	15	49	48.29	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-156	129.47590220	15.81370469	129	28	33.25	15	48	49.34	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-157	129.47918330	15.79727304	129	28	45.06	15	47	50.18	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-158	129.48218140	15.78079219	129	28	55.85	15	46	50.85	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-159	129.48489430	15.76426432	129	29	5.62	15	45	51.35	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-160	129.48732200	15.74769376	129	29	14.36	15	44	51.70	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-161	129.48946450	15.73108702	129	29	22.07	15	43	51.91	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-162	129.49131950	15.71444846	129	29	28.75	15	42	52.01	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-163	129.49288930	15.69778242	129	29	34.4	15	41	52.02	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-164	129.49416940	15.68109324	129	29	39.01	15	40	51.94	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-165	129.49516430	15.66438528	129	29	42.59	15	39	51.79	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-166	129.49587170	15.64766287	129	29	45.14	15	38	51.59	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-167	129.49628940	15.63093255	129	29	46.64	15	37	51.36	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-168	129.49642190	15.61419649	129	29	47.12	15	36	51.11	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-169	129.49626470	15.59746340	129	29	46.55	15	35	50.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-170	129.49582010	15.58073329	129	29	44.95	15	34	50.64	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-171	129.49508790	15.56401268	129	29	42.32	15	33	50.45	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-172	129.49407060	15.54730593	129	29	38.65	15	32	50.30	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-173	129.49276360	15.53061741	129	29	33.95	15	31	50.22	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-174	129.49117130	15.51395365	129	29	28.22	15	30	50.23	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-175	129.48929380	15.49731684	129	29	21.46	15	29	50.34	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-176	129.48713110	15.48071134	129	29	13.67	15	28	50.56	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-177	129.48468320	15.46414587	129	29	4.86	15	27	50.93	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-178	129.48195010	15.44762045	129	28	55.02	15	26	51.43	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-179	129.47893620	15.43114162	129	28	44.17	15	25	52.11	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-180	129.47563720	15.41471375	129	28	32.29	15	24	52.97	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-181	129.47205960	15.39834339	129	28	19.41	15	23	54.04	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-182	129.46820140	15.38203055	129	28	5.52	15	22	55.31	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-183	129.46406460	15.36578398	129	27	50.63	15	21	56.82	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-184	129.45964940	15.34960368	129	27	34.74	15	20	58.57	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-185	129.45495800	15.33350057	129	27	17.85	15	20	0.60	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-186	129.44999030	15.31747248	129	26	59.96	15	19	2.90	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-187	129.44474860	15.30152817	129	26	41.09	15	18	5.50	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-188	129.43923740	15.28566982	129	26	21.25	15	17	8.41	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-189	129.43345230	15.26990400	129	26	0.43	15	16	11.65	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-190	129.42739990	15.25423291	129	25	38.64	15	15	15.24	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-191	129.42108020	15.23866312	129	25	15.89	15	14	19.19	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-192	129.41449560	15.22319465	129	24	52.18	15	13	23.50	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-193	129.40764820	15.20783625	129	24	27.53	15	12	28.21	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-194	129.40053800	15.19259012	129	24	1.94	15	11	33.32	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-195	129.39316730	15.17746284	129	23	35.4	15	10	38.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-196	129.38554060	15.16245442	129	23	7.95	15	9	44.84	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-197	129.37765790	15.14757144	129	22	39.57	15	8	51.26	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-198	129.36952140	15.13281830	129	22	10.28	15	7	58.15	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-199	129.36113570	15.11819938	129	21	40.09	15	7	5.52	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-200	129.35250060	15.10371690	129	21	9	15	6	13.38	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-201	129.34362080	15.08937524	129	20	37.03	15	5	21.75	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-202	129.33449610	15.07518099	129	20	4.19	15	4	30.65	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-203	129.32512890	15.06113417	129	19	30.46	15	3	40.08	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-204	129.31552590	15.04724137	129	18	55.89	15	2	50.07	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-205	129.30568710	15.03350479	129	18	20.47	15	2	0.62	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-206	129.29561480	15.01992884	129	17	44.21	15	1	11.74	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-207	129.28531110	15.00652010	129	17	7.12	15	0	23.47	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-208	129.27478290	14.99327640	129	16	29.22	14	59	35.80	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-209	129.26402780	14.98020653	129	15	50.5	14	58	48.74	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21

ECS POINT	LONGITUDE (DD)	LATITUDE (DD)	LONGITUDE (DMS)			LATITUDE (DMS)			ARTICLE 76 PROVISION INVOKED	DISTANCE TO NEXT POINT (M)	CRITICAL FOS POINT
			DEG	MIN	SEC	DEG	MIN	SEC			
ECS-B-210	129.25305260	14.96731051	129	15	10.99	14	58	2.32	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-211	129.24185960	14.95459492	129	14	30.69	14	57	16.54	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-212	129.23045100	14.94206198	129	13	49.62	14	56	31.42	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-213	129.21883130	14.92971391	129	13	7.79	14	55	46.97	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-214	129.20700270	14.91755511	129	12	25.21	14	55	3.20	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-215	129.19496750	14.90558998	129	11	41.88	14	54	20.12	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-216	129.18273250	14.89382074	129	10	57.84	14	53	37.75	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-217	129.17029530	14.88224960	129	10	13.06	14	52	56.10	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-218	129.15766500	14.87088096	129	9	27.59	14	52	15.17	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-219	129.14484380	14.85971923	129	8	41.44	14	51	34.99	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-220	129.13183390	14.84876663	129	7	54.6	14	50	55.56	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-221	129.11863990	14.83802318	129	7	7.1	14	50	16.88	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-222	129.10526400	14.82749547	129	6	18.95	14	49	38.98	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-223	129.09171070	14.81718573	129	5	30.16	14	49	1.87	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-224	129.07798440	14.80709616	129	4	40.74	14	48	25.55	Art 76 (4)(a)(ii): FOS + 60M	1.00	BR-FOS21
ECS-B-225	129.06408970	14.79722898	129	3	50.72	14	47	50.02	Art 76 (4)(a)(ii): FOS + 60M	58.685	BR-FOS21
ECS-B-226	128.24611111	14.22289444	128	14	46.00	14	13	22.42		N/A	BR-FOS21

Annex 227

United Nations, Commission on the Limits of the Continental Shelf, *Progress of Work in the Commission on the Limits of the Continental Shelf: Statement by the Chairperson*, U.N. Doc. CLCS/74 (30 Apr. 2012)

United Nations Convention on the Law of the Sea

CLCS/74

Commission on the Limits of the Continental Shelf

Distr.: General
30 April 2012

Original: English

Twenty-ninth session
New York, 19 March-27 April 2012

Progress of work in the Commission on the Limits of the Continental Shelf

Statement by the Chairperson

Summary

The present statement provides information on the work done by the Commission and its subcommissions prior to and during the twenty-ninth session, in particular with regard to the examination of the revised submission made by Barbados and the submissions made by Japan; France in respect of the areas of the French Antilles and the Kerguelen Islands; Uruguay; the Philippines in respect of the Benham Rise region; and the Cook Islands concerning the Manihiki Plateau. It also provides information on presentations made to the Commission by Guyana and in relation to its submission and by Mexico in relation to its submission in respect of the eastern polygon in the Gulf of Mexico.

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1. Pursuant to paragraph 66 of General Assembly resolution 66/231, the Commission on the Limits of the Continental Shelf held its twenty-ninth session at United Nations Headquarters from 19 March to 27 April 2012. The plenary part of the session was held from 9 to 20 April. The periods from 19 March to 5 April and from 23 to 27 April were used for the technical examination of submissions at the Geographic Information System (GIS) laboratories of the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs of the Secretariat.

2. The following members of the Commission attended the session: Osvaldo Pedro Astiz, Lawrence Folajimi Awosika, Harald Brekke, Galo Carrera Hurtado, Francis L. Charles, Peter F. Croker, Abu Bakar Jaafar, George Jaoshvili, Emmanuel Kalngui, Yuri Borisovitch Kazmin, Wenzheng Lu, Isaac Owusu Oduro, Yong-Ahn Park, Sivaramakrishnan Rajan, Michael Anselme Marc Rosette, Philip Alexander Symonds and Tetsuro Urabe.

3. Indurlall Fagoonee, Mihai Silviu German and Fernando Manuel Maia Pimentel informed the Secretariat that they were unable to attend the session. Alexandre Tagore Medeiros de Albuquerque, Chairperson of the Commission, passed away on 29 March 2012.

4. The Commission had before it the following documents and communications:

(a) Provisional agenda (CLCS/L.32/Rev.1);

(b) Statement by the Chairperson of the Commission on the progress of work in the Commission at its twenty-eighth session (CLCS/72);

(c) Submissions made by coastal States pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea[1] and addressed to the Commission through the Secretary-General of the United Nations;[2]

(d) General Assembly resolution 66/231;

(e) Communications received from Brazil (10 January 2012); China (6 February 2009, 24 August 2009, 3 August 2011 and 5 April 2012); Guyana (2 September 2011 and 3 April 2012); India (7 December 2011); Indonesia (28 December 2011); Japan (25 March 2009, 26 August 2009, 9 August 2011, 15 August 2011 and 9 April 2012); Madagascar (22 December 2011 and 6 March 2012); Mexico (19 December 2011, 23 December 2011 and 2 April 2012); Oman (27 March 2012); the Philippines (29 March 2012 and 4 April 2012); the Republic of Korea (27 February 2009, 11 August 2011 and 5 April 2012); and Venezuela (Bolivarian Republic of) (9 March 2012).

Item 1
Opening of the twenty-ninth session by the Chairperson of the Commission

5. The Acting Chairperson of the twenty-eighth session, Mr. Park, opened the plenary part of the session on 9 April 2012.

[1] United Nations, *Treaty Series*, vol. 1833, No. 31363.

[2] For a full list of the submissions made to the Commission, see www.un.org/Depts/los/clcs_new/commission_submissions.htm.

6. The Commission observed a minute of silence in honour of the former Chairperson, Mr. Albuquerque, following his untimely demise in Brazil on 29 March 2012.

Statement by the Director of the Division

7. The Director of the Division made a brief statement on behalf of the Legal Counsel. He recalled the significant contribution of the late Mr. Albuquerque to the work of the Commission and highlighted the important role of the Commission in effective implementation of the United Nations Convention on the Law of the Sea.

Item 2
Election of the Chairperson

8. Pursuant to rule 15 of its Rules of Procedure (CLCS/40/Rev.1), the Commission elected by consensus a new Chairperson, Mr. Carrera, for the remainder of Mr. Albuquerque's term.

Item 3
Adoption of the agenda

9. The Commission considered the provisional agenda (CLCS/L.32/Rev.1) and adopted it (CLCS/73).[3]

Item 4
Organization of work

10. The Commission approved its programme of work and the schedule for deliberations, as outlined by the Chairperson.

Item 5
Revised submission by Barbados

Report of the Subcommission

11. The Chairperson of the Subcommission, Mr. Rajan, informed the Commission that the Subcommission had continued the examination of the submission between sessions and had met during the resumed twenty-eighth session, from 5 to 9 December 2011, and the twenty-ninth session, from 26 March to 5 April 2012. He also informed the Commission that the delegation of Barbados had decided not to avail itself of its right to receive a presentation of the views and general conclusions of the Subcommission pursuant to paragraph 10.3 of annex III to the Rules of Procedure. The Subcommission had adopted the draft recommendations by

[3] In response to an invitation by the Chairperson to present their submissions at the twenty-eighth session, France (in respect of La Réunion Island and Saint-Paul and Amsterdam Islands), Iceland, Pakistan and Sri Lanka had indicated a preference to make their presentations at a later session. The deferrals of the presentations to a later time were communicated to the Chairperson on the understanding that they would not affect the position of the submissions in the queue.

consensus on 2 April 2012 and transmitted them to the Commission on the same day.

Consideration of draft recommendations

12. On 9 April 2012, the Chairperson of the Subcommission introduced to the Commission the draft recommendations in regard to the revised submission made by Barbados on 25 July 2011.

13. On 10 April 2012, the delegation of Barbados, headed by Leonard Nurse, made a presentation to the Commission pursuant to paragraph 15.1 bis of annex III to the Rules of Procedure of the Commission. In particular, Barbados noted that it had agreed with the conclusions of the Subcommission in relation to the revised submission.

14. The Commission then continued its meeting in private. On 13 April 2012, following a thorough consideration of the draft recommendations and of the presentation made by the delegation, the Commission adopted by consensus the "Recommendations of the Commission on the Limits of the Continental Shelf in regard to the revised submission made by Barbados on 25 July 2011".

15. Pursuant to article 6, paragraph 3, of annex II to the Convention, the recommendations, including a summary thereof,[4] were submitted in writing to the coastal State and to the Secretary-General of the United Nations on 17 April 2012.

Item 6
Submission made by Japan[5]

Consideration of draft recommendations

16. The Commission resumed its consideration of the draft recommendations, which had been introduced to it by the Subcommission at the twenty-eighth session (see CLCS/72, paras. 12-15).

17. Addressing the Shikoku Basin Region, the Commission did not agree that the whole area beyond the formula lines should be included in the continental shelf of Japan, and therefore amended the draft recommendations.

18. Addressing the Southern Kyushu-Palau Ridge Region, the Commission noted that, in accordance with the decision taken by the Commission at its twenty-fourth session (see CLCS/64, para. 26), the Subcommission had prepared the draft recommendations on all parts of the submission. The Commission also recalled that, according to the same decision, it would not take action on certain parts of those recommendations until it decided to do so. The Commission also took note of all the relevant communications received from China, Japan, Palau, the Republic of Korea and the United States of America, including the most recent communications received from China, Japan and the Republic of Korea.

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[4] Pursuant to paragraph 11 (3) of section V of annex III to the Rules of Procedure, the summary of the recommendations will be made public by the Secretary-General on the website dedicated to the work of the Commission at www.un.org/Dept/los.

[5] Submission made on 12 November 2008; see www.un.org/Depts/los/clcs_new/submissions_files/submission_jpn.htm.

19. The Commission proceeded to a formal vote on whether it should take action on the part of the recommendations relating to the Southern Kyushu-Palau Ridge Region. Responding to a question as to whether this was a matter of substance or of procedure, the Chairperson ruled that it was one of substance, requiring a two-thirds majority. That ruling was contested and subsequently upheld by a simple majority of 8 votes in favour, 7 against and 1 abstention. The Commission then discussed the method of voting and decided to follow rule 38 of the Rules of Procedure, which stipulates that "the Commission shall normally vote by a show of hands". Thereafter, the Commission voted on the proposal to take action on the part of the draft recommendations relating to the Southern Kyushu-Palau Ridge Region. The proposal did not receive a two-thirds majority of votes: out of 16 members, 5 were in favour, 8 were against and 3 abstained. The Commission considered that it would not be in a position to take action on the parts of the recommendations relating to the Southern Kyushu-Palau Ridge Region until such time as the matters referred to in the communications referred to above had been resolved.

Adoption of recommendations

20. On 19 April 2012, the Commission adopted by consensus the "Recommendations of the Commission on the Limits of the Continental Shelf in regard to the submission made by Japan on 12 November 2008".

21. Pursuant to article 6, paragraph 3, of annex II to the Convention, the recommendations, including a summary thereof,[4] were submitted in writing to the coastal State and to the Secretary-General on 26 April 2012.

Item 7
Consideration of the submission made by France in respect of the areas of the French Antilles and the Kerguelen Islands[6]

Report of the Subcommission

22. The Chairperson of the Subcommission, Mr. Jaafar, informed the Commission that the Subcommission had continued its work during the resumed twenty-eighth session, from 28 November to 9 December 2011, and during the twenty-ninth session, from 19 March to 5 April 2012. During those periods it had held meetings with the delegation of France, conveying observations and questions and delivering presentations which related to the partial submission. In the course of the Subcommission's examination of the partial submission, the delegation had provided additional material consisting of documents and made several presentations to the subcommission.

23. Pursuant to paragraph 10.3 of annex III to the Rules of Procedure, the Subcommission presented its views and general conclusions to the delegation. The Subcommission then finalized the draft recommendations, which were adopted by consensus on 23 March 2012 and transmitted to the Commission on 5 April 2012.

[6] Submission made on 5 February 2009; see www.un.org/Depts/los/clcs_new/submissions_files/submission_fra1.htm.

Consideration of draft recommendations

24. On 9 April 2012, the Chairperson and other members of the Subcommission presented to the Commission the draft recommendations in regard to the submission made by France in respect of the areas of the French Antilles and the Kerguelen Islands.

25. Pursuant to paragraph 15.1 bis of annex III to the Rules of Procedure, on 11 April 2012, the delegation of France, headed by Elie Jarmache, head of delegation, Chargé de mission at the Secrétariat Général de la Mer, who was accompanied by Walter Roest, Chief Geophysicist, made a presentation to the Commission in respect of the submission.

26. Following a thorough consideration of the draft recommendations prepared by the Subcommission and of the presentation made by the delegation, the Commission adopted by consensus, on 19 April 2012, the "Recommendations of the Commission on the Limits of the Continental Shelf in regard to the submission made by France on 5 February 2009, in respect of the areas of the French Antilles and the Kerguelen Islands".

27. Pursuant to article 6, paragraph 3, of annex II to the Convention, the recommendations, including a summary thereof,[4] were submitted in writing to the coastal State and to the Secretary-General on 27 April 2012.

Item 8
Consideration of the submission made by Uruguay[7]

Report of the Subcommission

28. The Chairperson of the Subcommission, Mr. Charles, reported on the progress of the work of the Subcommission. During the resumed twenty-eighth session, from 5 to 9 December 2011, the Subcommission held two meetings with the delegation of Uruguay. The delegation advised the Subcommission that it would be providing new data and materials updating its submission.

29. The Subcommission then continued its work at the twenty-ninth session, from 19 March to 5 April 2012 and from 23 to 27 April 2012, and finalized its work for handing over to the next Commission. In that regard, following a request from the Commission, the Subcommission made a presentation to the plenary on the status of the Subcommission's considerations to date.

30. During the twenty-ninth session, the Subcommission requested Uruguay to provide an indicative timetable for its presentation of the new data, studies and analyses related to its proposed updated submission. The Subcommission received a response containing, among other things, a preliminary timetable for the presentation of the updated submission.

31. The Subcommission also considered its future programme of work and decided that it would hold its next meeting from 13 to 24 August 2012.

[7] Submission made on 7 April 2009; see www.un.org/Depts/los/clcs_new/submissions_files/submission_ury_21_2009.htm.

Item 9
Consideration of the submission made by the Philippines in respect of the Benham Rise region[8]

Report of the Subcommission

32. The Chairperson of the Subcommission, Mr. Awosika, informed the Commission that the Subcommission had continued the examination of the submission between sessions and had met during the resumed twenty-eighth session, from 5 to 9 December 2011, and the twenty-ninth session, from 26 March to 5 April 2012. The Subcommission held meetings with the delegation of the Philippines at which the former presented its views and general conclusions to the delegation, pursuant to paragraph 10.3 of annex III to the Rules of Procedure. On 2 April 2012, the Subcommission adopted the draft recommendations by consensus and transmitted them to the Commission on the same day.

Consideration of draft recommendations

33. On 9 April 2012, the Chairperson and other members of the Subcommission introduced to the Commission the draft recommendations in regard to the submission made by the Philippines in respect of the Benham Rise Region on 8 April 2009.

34. On 12 April 2012, pursuant to paragraph 15.1 bis of annex III to the Rules of Procedure of the Commission, the delegation of the Philippines, lead by Libran N. Cabactulan, Permanent Representative of the Philippines to the United Nations, made a presentation to the Commission in which it highlighted its agreement with the Subcommission's determination of the outer limits.

Adoption of recommendations

35. The Commission then continued its deliberations in private. On 12 April 2012, following a thorough consideration of the draft recommendations prepared by the Subcommission and of the above-mentioned presentation made by the delegation, the Commission adopted by consensus the "Recommendations of the Commission on the Limits of the Continental Shelf in regard to the submission made by the Philippines in respect of the Benham Rise Region on 8 April 2009".

36. Pursuant to article 6, paragraph 3, of annex II to the Convention, the recommendations, including a summary thereof,[4] were submitted in writing to the coastal State and to the Secretary-General on 17 April 2012.

[8] Submission made on 8 April 2009; see www.un.org/Depts/los/clcs_new/submissions_files/submission_phl_22_2009.htm.

Item 10
Consideration of the submission made by the Cook Islands in respect of the Manihiki Plateau

Report of the Subcommission

37. The Chairperson of the Subcommission, Mr. Carrera, informed the Commission that the Subcommission had met during the twenty-eighth session, from 29 August to 2 September 2011. The Subcommission also met during the twenty-ninth session, following the plenary part of that session, from 23 to 27 April 2012. The Subcommission held two meetings with the delegation, on 24 and 26 April 2012, during which the Subcommission and the delegation made presentations on matters related to the submission. In its presentation, the delegation noted that it had acquired, as recommended by the Subcommission, additional data from publicly available sources. Following the analysis of those data, the Cook Islands had amended the formula line and outer limits of its continental shelf beyond 200 nautical miles in one area of the submission. The Subcommission decided that it would bring the amendments to the original submission to the attention of the Commission.

38. The Subcommission also considered its future programme of work and decided that it would hold its next meeting from 13 to 17 August 2012.

Item 11
Consideration of other submissions

(a) Submission made by Guyana[9]

39. The submission was presented to the Commission on 11 April 2012 by Carolyn Rodrigues-Birkett, Minister for Foreign Affairs and head of delegation; Newell Dennison, Manager, Petroleum Division, Guyana Geology and Mines Commission; and Keith George, Ambassador of Guyana to Suriname. The delegation also included Elisabeth Harper, Director-General, Ministry of Foreign Affairs; George Talbot, Permanent Representative of Guyana to the United Nations; and a number of advisers.

40. Ms. Rodrigues-Birkett informed the Commission that one of its current members, Mr. Carrera, and one of the former members, Karl Hinz, had assisted Guyana by providing scientific and technical advice.

41. In relation to the communication from the Bolivarian Republic of Venezuela, dated 9 March 2012, as well as a responding note verbale from Guyana dated 4 April 2012, concerning the submission, Ms. Rodrigues-Birkett observed, inter alia, that there were no territorial disputes and no maritime boundary disputes or controversies which might affect the consideration of any portion of the outer limits of the submission. She also highlighted that the submission was made without prejudice to maritime boundary delimitation.

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[9] Submission made on 6 September 2011; see www.un.org/depts/los/clcs_new/submissions_files/submission_guy_57_2011.htm.

42. The Commission then continued its meeting in private. Addressing the modalities for the consideration of the submission and taking into account the communications referred to above and the presentation made by the delegation, the Commission decided that, pursuant to article 5 of annex II to the Convention and rule 42 of the Rules of Procedure, the submission would be addressed by a subcommission to be established in accordance with rule 51, paragraph 4 ter, of the Rules of Procedure, at a future session. The Commission also decided that it would revert to the consideration of the submission at the plenary level when the submission was next in line for consideration as queued in the order in which it was received.

(b) Submission made by Mexico in respect of the eastern polygon in the Gulf of Mexico[10]

43. Mr. Kazmin, Vice-Chairperson, presided over this part of the proceedings of the Commission. The submission was presented to the Commission on 12 April 2012 by Arturo Dager, alternate head of delegation, Legal Adviser, Ministry of Foreign Relations, and other members of the delegation of Mexico. The delegation included a number of advisers from various ministries and other governmental entities.

44. Mr. Dager informed the Commission that one of its current members, Mr. Carrera, had assisted Mexico by providing scientific and technical advice.

45. Mr. Dager also noted that Mexico had held consultations with the neighbouring coastal States, namely Cuba and the United States of America, and that, in that regard, there were no territorial disputes or maritime boundary disputes which might affect the consideration of any area of the outer limits of the submission. He also emphasized that there were no notes verbales objecting to the consideration of the submission and that the submission was made without prejudice to maritime boundary delimitation.

46. The Commission then continued its deliberations in private. Addressing the modalities for the consideration of the submission, the Commission decided by consensus that, pursuant to article 5 of annex II to the Convention and rule 42 of the Rules of Procedure, the submission would be addressed by a subcommission to be established in accordance with rule 51, paragraph 4 ter, of the Rules of Procedure, at a future session. The Commission decided that it would establish that subcommission at the time when the submission was next in line for consideration, as queued in the order in which it was received.

Item 12
Report of the Chairperson of the Committee on Confidentiality

47. The Chairperson, Mr. Croker, reported that since the twenty-eighth session of the Commission no circumstances had arisen requiring a meeting of the Committee.

[10] Submission made on 19 December 2011; see www.un.org/depts/los/clcs_new/submissions_files/submission_mex58_2011.htm.

Item 13
Report of the Chairperson of the Editorial Committee

48. The Chairperson, Mr. Jaafar, reported that the Committee had not held any meetings during the twenty-ninth session.

Item 14
Report of the Chairperson of the Scientific and Technical Advice Committee

49. The Chairperson, Mr. Symonds, reported that the Commission had not received any formal requests for scientific and technical advice. The Committee had held one meeting during the twenty-ninth session and discussed issues under its purview, including a request for a meeting by Oman. In that context, the Commission reiterated its willingness to provide scientific and technical advice to States upon request.

50. On 23 April 2012, the Chairperson of the Commission, Mr. Carrera, and the Chairperson of the Committee, Mr. Symonds, met with Salim bin Abdullah bin Rashid al-Alawi, Chief of the Office of Continental Shelf and Maritime Affairs of the Ministry of Foreign Affairs, and other representatives of Oman and briefed them about rules and procedures concerning the provision of scientific and technical advice by the Commission. The representatives of Oman highlighted the need for capacity-building and expressed their interest in a five-day training course on the preparation of submissions, similar to that previously delivered by the Division at the regional level.

Item 15
Report of the Chairperson of the Training Committee and other training issues

51. The Chairperson of the Committee, Mr. Carrera, reported that the Committee had not held any meetings during the twenty-ninth session.

Item 16
Mechanism to seek advice on matters of interpretation of certain provisions of the Convention other than those contained in its article 76, and annex II, as well as in the Statement of Understanding adopted on 29 August 1980 by the Third United Nations Conference on the Law of the Sea

52. The Commission considered this agenda item in the light of its deliberations at the twenty-eighth session (see CLCS/72, paras. 37-40). The proposal to seek advice from the Legal Counsel on the matter was withdrawn and the Commission decided not to pursue this issue any further.

Item 17
Other matters

Commemorative meeting

53. On 13 April 2012, the Commission met informally to pay tribute to the memory of the late Mr. Albuquerque. The meeting was attended by Maria Luiza Ribeiro Viotti, Permanent Representative of Brazil to the United Nations, and other representatives of Brazil. Statements paying tribute to the life and achievements of Mr. Albuquerque were made by Ms. Viotti, the Chairperson and Vice-Chairpersons of the Commission and the Director and staff of the Division.

Presentation to the twenty-second Meeting of States Parties

54. The Commission agreed that the Chairperson would prepare, in consultation with all members, and deliver to the twenty-second Meeting of States Parties to the Convention a presentation on the work of the Commission.

Trust funds

55. The Director of the Division briefed the Commission on the status of the trust fund for the purpose of defraying the cost of participation of the members of the Commission from developing States in the meetings of the Commission. It was noted that assistance had been provided to six members of the Commission during the twenty-eighth session, in the amount of approximately US$ 109,500; while five members had received assistance for the resumed twenty-seventh session, in the amount of approximately US$ 38,000.

56. It was further noted that, since the twenty-eighth session of the Commission, contributions had been received from China (US$ 20,000), Côte d'Ivoire (US$ 375), Japan (US$ 211,260) and Mexico (US$ 7,500). According to the provisional statement of accounts, as at the end of January 2012, the balance of the trust fund was approximately US$ 809,640.17.

57. The Director also provided an overview of the status of the trust fund for the purpose of facilitating the preparation of submissions. Since the twenty-eighth session of the Commission, the Secretariat had received a contribution of US$ 375 to the trust fund from Côte d'Ivoire. According to the provisional statement of accounts, as at the end of December 2011, the balance of the trust fund was approximately US$ 1,229,000.

Establishment of new subcommissions

58. In view of the expiration of the term of office of its current members on 15 June 2012 and the elections to be held at the forthcoming twenty-second Meeting of States Parties, in June 2012, the Commission decided not to establish any new subcommissions at the current time.

59. The Commission noted that the consideration of some submissions which were next in line had been deferred owing to the nature of statements contained in communications received in respect of those submissions. The Commission also noted that, in at least one case, the circumstances which had led to the postponement of the consideration of the submission might no longer exist. However, it was of the view that in order to be able to proceed with the establishment of a subcommission

and the consideration of the submission, an official communication from the States concerned would be required.

Workload of the Commission

60. The Commission noted that it had reviewed the issue of its workload on several occasions and still considered it a matter of high importance for its future work. It decided to transmit to the next Commission the entire set of presentations that it had made on this issue to the Meeting of States Parties and the Informal Working Group facilitated by the Bureau of the Meeting. The Commission also recommended that the issue of the workload should be included on its agenda at the next plenary session.

Dates of future sessions

61. The Commission recalled that, in accordance with General Assembly resolution 66/231, its thirtieth session would be held from 30 July to 10 August 2012. In addition, the Subcommission established to consider the submission of the Cook Islands would meet from 13 to 17 August 2012, and the Subcommission established to consider the submission of Uruguay would meet from 13 to 24 August 2012, following the plenary part of the thirtieth session.

62. The dates of the subsequent sessions would be discussed at the next plenary session of the Commission, taking into account the request by the Meeting of States Parties to the Convention (SPLOS/229, para. 1) that the Commission consider, in coordination with the Secretariat, meeting in New York for up to 26 weeks but not less than an intended minimum of 21 weeks a year for a period of five years, distributed in such a way that the Commission determined to be the most effective, and that no two sessions would be sequential.

Acknowledgements

63. The Chairperson expressed his appreciation and gratitude to the members of the Commission for their support, hard work and utmost dedication over the past five years.

64. In turn, the members of the Commission thanked the Chairperson for his skilful leadership of the Commission at the current session and his contribution to the work of the Commission during his present and previous terms of office.

65. The Commission noted with appreciation and gratitude the high standard of secretariat services rendered to it by the Division.

66. The Commission expressed its appreciation to other members of the Secretariat for their assistance provided to the Commission over the past five years, and in particular noted the high professional standard of interpretation in the official languages of the United Nations and the assistance provided by the conference officers during that period.

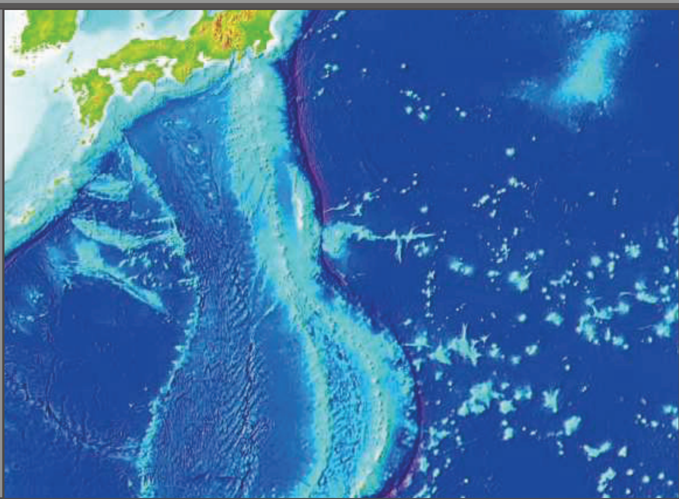
Annex 228

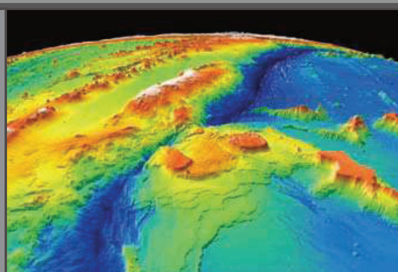
Japan, *Submission to the United Nations Commission on the Limits of the Continental Shelf* (27 Dec. 2013)

Japan’s Submission to the Commission on the Limits of the Continental Shelf

pursuant to Article 76, paragraph 8 of the United Nations Convention on the Law of the Sea

EXECUTIVE SUMMARY





JPN-ES

S/V Takuyo

S/V Meiyo

R/V Kairei

S/V Shoyo

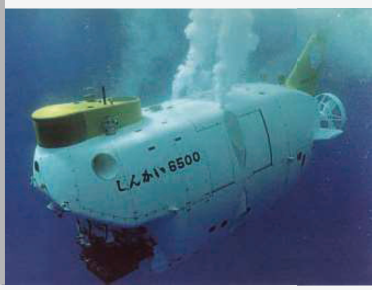
R/V Kaiyo

Boring Machine System

R/V Hakurei-maru II

R/V Tairikudana

Ocean Bottom Seismograph



Manned Research Submersible Shinkai 6500

Japan's Submission to the Commission on the Limits of the Continental Shelf

Japan’s Submission to the Commission on the Limits of the Continental Shelf pursuant to Article 76, paragraph 8 of the United Nations Convention on the Law of the Sea

Executive Summary

Table of Contents

1. Introduction

Japan signed the United Nations Convention on the Law of the Sea (hereinafter referred to as "the Convention") on 7 February 1983 and ratified it on 20 June 1996. The Convention entered into force for Japan on 20 July 1996.

With the submission of this and associated documents, Japan intends to establish, in accordance with article 76 of the Convention, the outer limits of its continental shelf beyond 200 nautical miles (M) from the baselines from which the breadth of the territorial sea is measured (hereinafter referred to as "the territorial sea baselines") in seven regions located to the south and the south-east off the main islands of Japan. These seven regions are described in this submission as follows:

1. The Southern Kyushu-Palau Ridge Region (KPR)
2. The Minami-Io To Island Region (MIT)
3. The Minami-Tori Shima Island Region (MTS)
4. The Mogi Seamount Region (MGS)
5. The Ogasawara Plateau Region (OGP)
6. The Southern Oki-Daito Ridge Region (ODR)
7. The Shikoku Basin Region (SKB)

According to article 76 of the Convention, article 4 of Annex II of the Convention and the decision adopted by the 11th Meeting of States Parties to the Convention (SPLOS/72), Japan is under the obligation to submit particulars of the outer limits of its continental shelf beyond 200 M from the territorial sea baselines (hereinafter referred to as “the extended continental shelf”) to the Commission on the Limits of the Continental Shelf set up under Annex II of the Convention (hereinafter referred to as “the Commission”) along with supporting scientific and technical data by 12 May 2009. This submission is meant to fulfill that obligation.

Figure 1.1 provides an overview of the areas of Japan's extended continental shelf submitted to the Commission. Section 6 presents detailed descriptions of each region including maps that show the location of the fixed points used to define the outer limits of the extended continental shelf and the provisions of article 76 of the Convention that have been invoked to establish these points.

The appendix of this executive summary presents lists of the coordinates of the fixed points that define the outer limits of Japan's extended continental shelf together with information concerning the provisions of article 76 of the Convention invoked to establish these points.

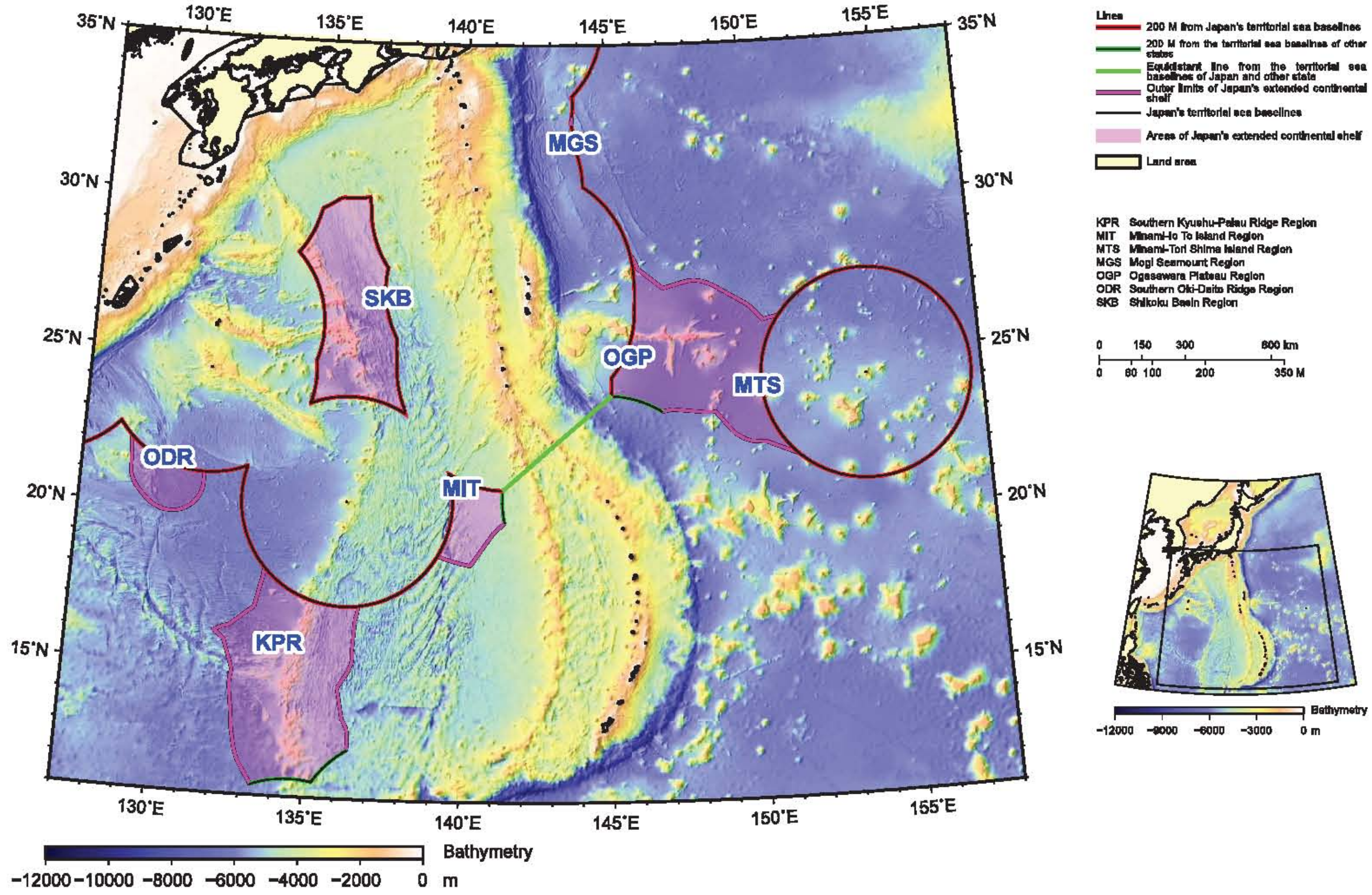


Figure 1.1. Areas of Japan's extended continental shelf

2. Specific Provisions of Article 76 Invoked to Support the Submission

In Japan's submission, all points of the foot of the continental slope are determined pursuant to the provision of paragraph 4(b) of article 76 of the Convention. No evidence to the contrary is used for its application. For all of the regions described in this submission, only the rule prescribed in paragraph 4(a)(ii) of article 76 is used to establish the outer edge of the continental margin. In some regions, constraint rules prescribed in paragraph 5 of article 76 are adopted to establish the outer limits of the extended continental shelf. The outer limit of the extended continental shelf is delineated by straight lines connecting fixed points pursuant to the provision of paragraph 7 of article 76.

3. Commission Members who Provided Advice during the Preparation of the Submission

During the preparation of this submission, Japan was provided scientific and technical advice by Professor Kensaku Tamaki, who is a member of the Commission.

4. Relevant Maritime Delimitations

In accordance with paragraph 2 (a) of Annex I to the Commission's Rules of Procedures, Japan wishes to inform the Commission that the area of continental shelf that is the subject of this submission is not subject to any dispute between Japan and other States except in the areas noted below.

Potential overlap

The continental shelf in areas from Haha Shima Islands and Minami-Tori Shima Island, and from Minami-Io To Island, where potential overlap exists, is the subject of consultations between Japan and the United States of America. Japan's submission of, and the Commission's consideration of and recommendation on, these two areas is without prejudice to the question of the delimitation of the continental shelf beyond 200 M between Japan and the United States of America. The Government of the United States of America has indicated to the Government of Japan that it has no objection to the Commission considering and making recommendations on this part of the submission, without prejudice to such delimitation.

The continental shelf in an area from Oki-no-Tori Shima Island, where potential overlap exists, is the subject of consultations between Japan and the Republic of Palau. Japan's submission of, and the Commission's consideration of and recommendation on, this area is without prejudice to the question of the delimitation of the continental shelf beyond 200 M between Japan and the Republic of Palau. The Government of the Republic of Palau has indicated to the Government of Japan that it has no objection to the Commission considering and making recommendations on this part of the submission, without prejudice to such delimitation.

5. State Bodies Responsible for the Preparation of the Submission

The preparation of all the documents, maps, charts and databases, and collection of all the sea-based data used in Japan’s submission were carried out with cooperation of relevant State bodies and affiliated agencies as follows:

- Ministry of Foreign Affairs
- Ministry of Education, Culture, Sports, Science and Technology
- Ministry of Economy, Trade and Industry
- Japan Coast Guard
- Japan Agency for Marine-Earth Science and Technology
- Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology
- Japan Oil, Gas and Metals National Corporation

The Headquarters for Ocean Policy is responsible for the overall coordination of the project. The above-mentioned State bodies and their agencies are responsible for the quality and reliability of all the materials included in the submission.

6. Region-by-region Description of the Outer Limits of Japan's Extended Continental Shelf

6.1. The Southern Kyushu-Palau Ridge Region

This section describes the outer limits of the extended continental shelf in the Southern Kyushu-Palau Ridge region.

The continental margin in this region extends to the south along the Kyushu-Palau Ridge, which forms a natural prolongation of Japan's land mass on the Ridge represented by Oki-no-Tori Shima Island.

The outer limits of the extended continental shelf in this region are defined by straight lines not exceeding 60 M in length that connect 618 fixed points. The points can be grouped into the following types.

- 490 points are located on the formulae line 60 M from the foot of the continental slope (paragraph 4(a)(ii), article 76).
- 34 points are located on the constraint line 350 M from the territorial sea baselines (paragraph 5, article 76).
- 88 points are located on the constraint line 100 M from the 2,500 metre isobath (paragraph 5, article 76).
- 1 point is located on the formulae line 60 M from the foot of the continental slope and the constraint line 350 M from the territorial sea baselines (paragraphs 4(a)(ii) and 5, article 76).
- 1 point is located on the formulae line 60 M from the foot of the continental slope and the constraint line 100 M from the 2,500 metre isobath (paragraphs 4(a)(ii) and 5, article 76).
- 1 point is located on the 200 M line from Japan's territorial sea baselines and the formulae line 60 M from the foot of the continental slope (paragraphs 1 and 4(a)(ii), article 76).
- 1 point is located on the 200 M line from Japan's territorial sea baselines (paragraph 1, article 76).
- 1 point is located on the 200 M line from the territorial sea baselines of the Republic of Palau (paragraph 1, article 76).
- 1 point is located on the 200 M line from the territorial sea baselines of the Federated States of Micronesia (paragraph 1, article 76).

Lists of the coordinates of these fixed points in this region are provided in Table 1 of the appendix of this executive summary.

Figure 6.1 shows the outer limits of the extended continental shelf and relevant information for this region.

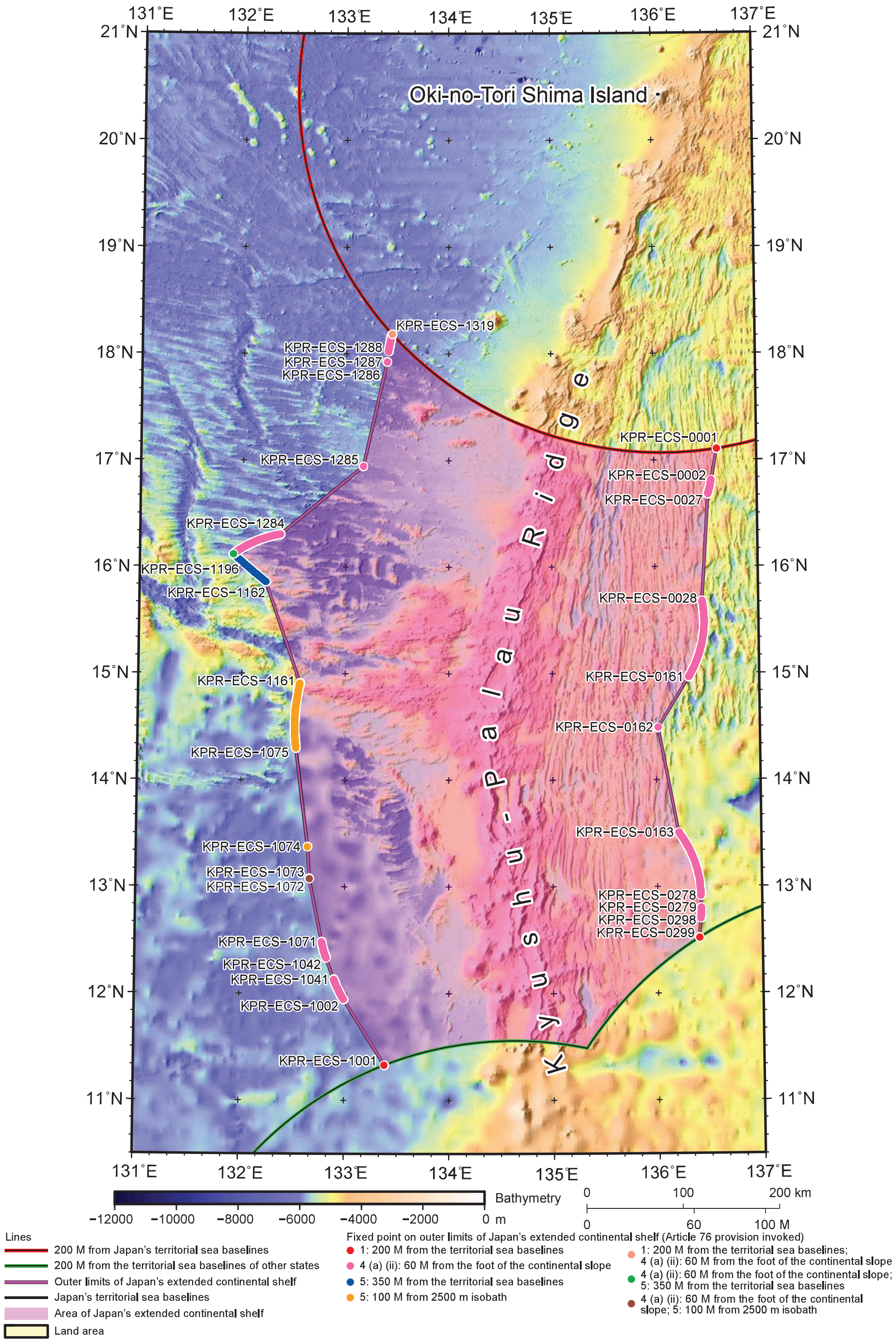


Figure 6.1. Map of the outer limits of the extended continental shelf in the Southern Kyushu-Palau Ridge region including provisions of article 76 of the Convention invoked.

6.2. The Minami-Io To Island Region

This section describes the outer limits of the extended continental shelf in the Minami-Io To Island region.

The continental margin in this region comprises the Izu-Ogasawara and Mariana Arcs and adjacent submarine highs, which together form a natural prolongation of Japan's land mass on the Arc represented by islands such as Minami-Io To Island.

The outer limits of the extended continental shelf in this region are defined by the straight lines not exceeding 60 M in length that connect 147 fixed points. The points can be grouped into the following types.

- 53 points are located on the formulae line 60 M from the foot of the continental slope (paragraph 4(a)(ii), article 76).
- 91 points are located on the constraint line 350 M from the territorial sea baselines (paragraph 5, article 76).
- 1 point is located on the formulae line 60 M from the foot of the continental slope and the constraint line 350 M from the territorial sea baselines (paragraphs 4(a)(ii) and 5, article 76).
- 1 point is located on the 200 M line from Japan's territorial sea baselines and the constraint line 350 M from the territorial sea baselines (paragraphs 1 and 5, article 76).
- 1 point is located on the 200 M line from the territorial sea baselines of the United States of America (paragraph 1, article 76).

A list of the coordinates of these fixed points in this region is provided in Table 2 of the appendix of this executive summary.

Figure 6.2 shows the outer limits of the extended continental shelf and relevant information for this region.

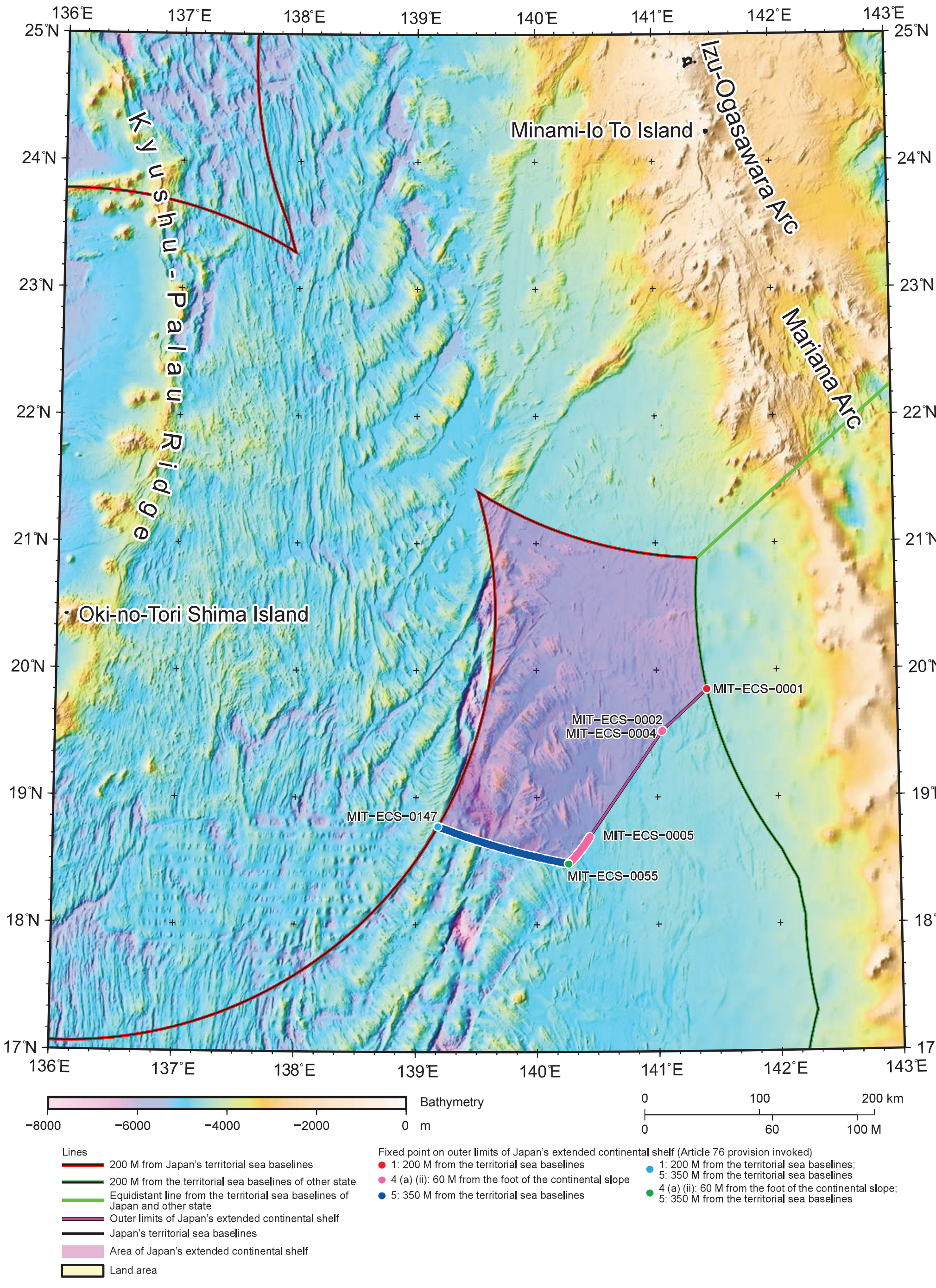


Figure 6.2. Map of the outer limits of the extended continental shelf in the Minami-Io To Island region including provisions of article 76 of the Convention invoked.

6.3. The Minami-Tori Shima Island Region

This section describes the outer limits of the extended continental shelf in the Minami-Tori Shima Island region.

The continental margin in this region comprises a broad submarine high, which forms a natural prolongation of Japan’s land mass represented by Minami-Tori Shima Island.

The outer limits of the extended continental shelf in this region are defined by the straight lines not exceeding 60 M in length that connect 574 fixed points. The points can be grouped into the following types.

- 572 points are located on the formulae line 60 M from the foot of the continental slope (paragraph 4(a)(ii), article 76).
- 2 points are located on the 200 M line from Japan’s territorial sea baselines (paragraph 1, article 76).

A list of the coordinates of these fixed points in this region is provided in Table 3 of the appendix of this executive summary.

Figure 6.3 shows the outer limits of the extended continental shelf and relevant information for this region.

The extended continental shelf in this region partially overlaps with the extended continental shelf in the Ogasawara Plateau region (See Figure 1.1 and section 6.5.)

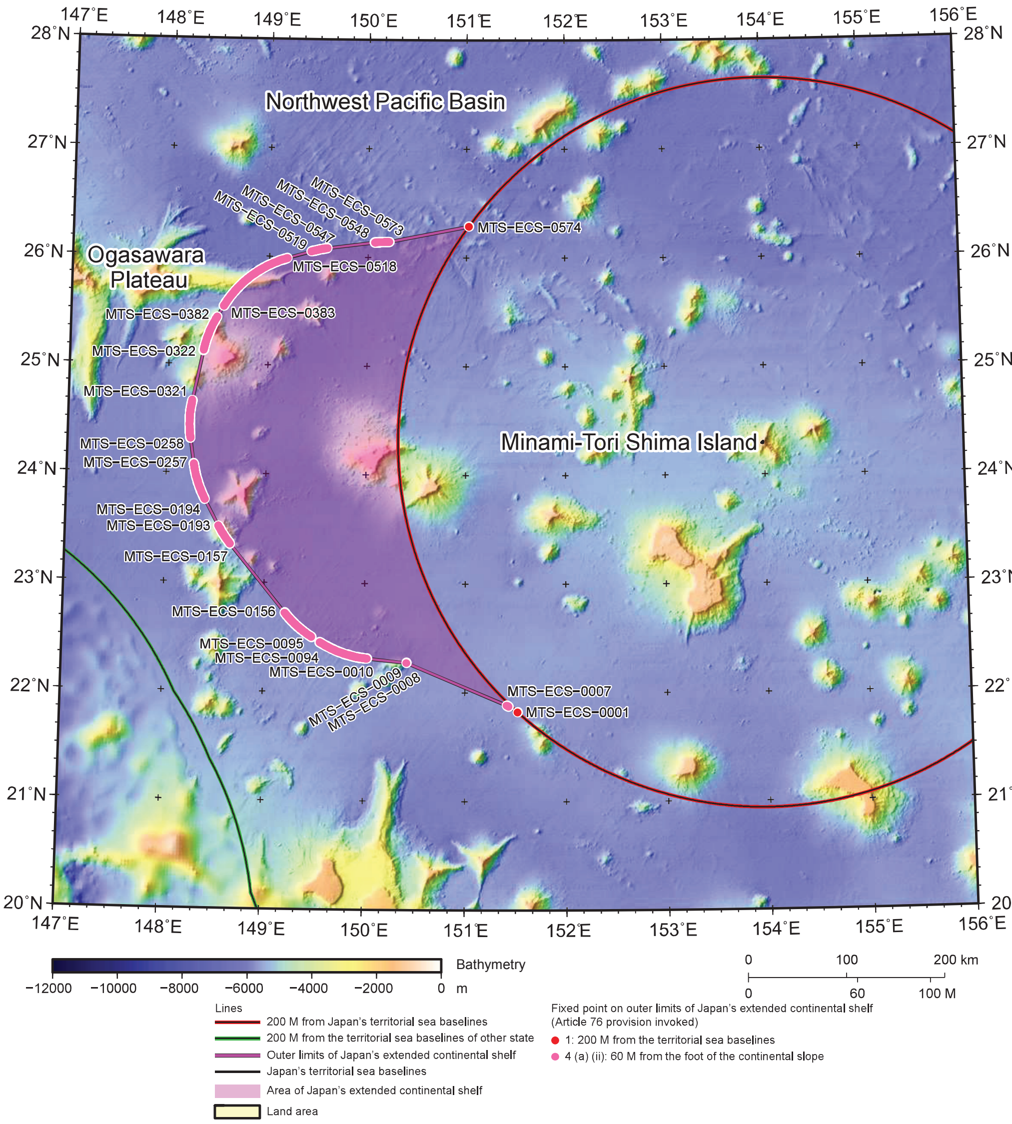


Figure 6.3. Map of the outer limits of the extended continental shelf in the Minami-Tori Shima Island region including provisions of article 76 of the Convention invoked.

6.4. The Mogi Seamount Region

This section describes the outer limits of the extended continental shelf in the Mogi Seamount region.

The continental margin in this region comprises the Izu-Ogasawara Arc and the Mogi Seamount, which together form a natural prolongations of Japan's land mass on the Arc represented by islands such as Hachijo Shima Island.

The outer limits of the extended continental shelf in this region are defined by the straight lines not exceeding 60 M in length that connect 41 fixed points. The points can be grouped into the following types.

- 39 points are located on the formulae line 60 M from the foot of the continental slope (paragraph 4(a)(ii), article 76).
- 2 points are located on the 200 M line from Japan's territorial sea baselines and the formulae line 60 M from the foot of the continental slope (paragraphs 1 and 4(a)(ii), article 76).

A list of the coordinates of these fixed points in this region is provided in Table 4 of the appendix of this executive summary.

Figure 6.4 shows the outer limits of the extended continental shelf and relevant information for this region.

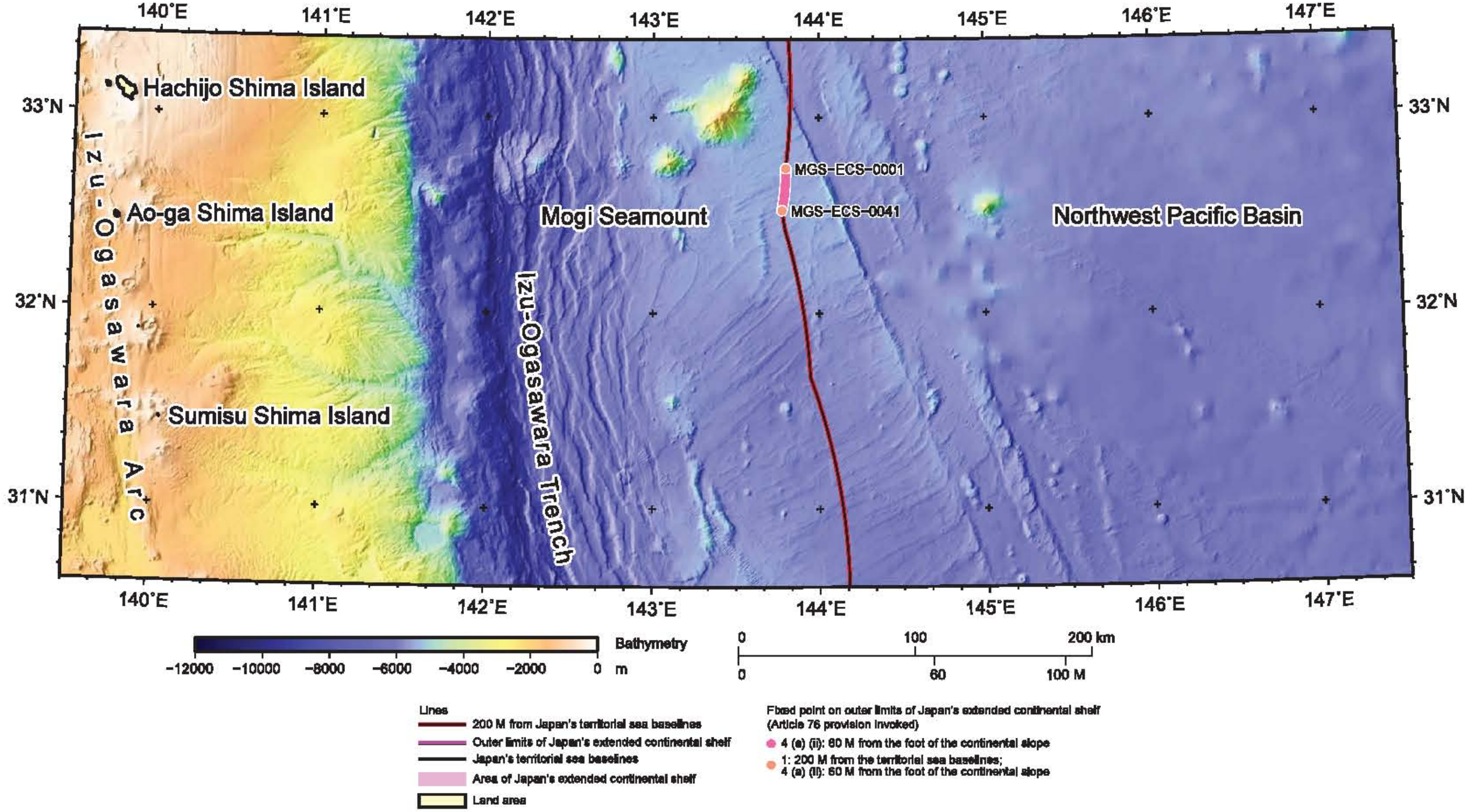


Figure 6.4. Map of the outer limits of the extended continental shelf in the Mogi Seamount region including provisions of article 76 of the Convention invoked.

6.5. The Ogasawara Plateau Region

This section describes the outer limits of the extended continental shelf in the Ogasawara Plateau region.

The continental margin in this region comprises the Izu-Ogasawara Arc, the Ogasawara Plateau and the Uyeda Ridge, which together form a natural prolongation of Japan's land mass on the Arc represented by islands such as Chichi Shima Island.

The outer limits of the extended continental shelf in this region are defined by the straight lines not exceeding 60 M in length that connect 584 fixed points. The points can be grouped into the following types.

- 580 points are located on the formulae lines 60 M from the foot of the continental slope (paragraph 4(a)(ii), article 76).
- 2 points are located on the 200 M line from Japan's territorial sea baselines and the formulae line 60 M from the foot of the continental slope (paragraphs 1 and 4(a)(ii), article 76).
- 1 point is located on the 200 M line from Japan's territorial sea baselines (paragraph 1, article 76).
- 1 point is located on the 200 M line from the territorial sea baselines of the United States of America (paragraph 1, article 76).

Lists of the coordinates of these fixed points in this region are provided in Table 5 of the appendix of this executive summary.

Figure 6.5 shows the outer limits of the extended continental shelf and relevant information for this region.

The extended continental shelf in this region partially overlaps with the extended continental shelf in the Minami-Tori Shima Island region (See Figure 1.1 and section 6.3.).

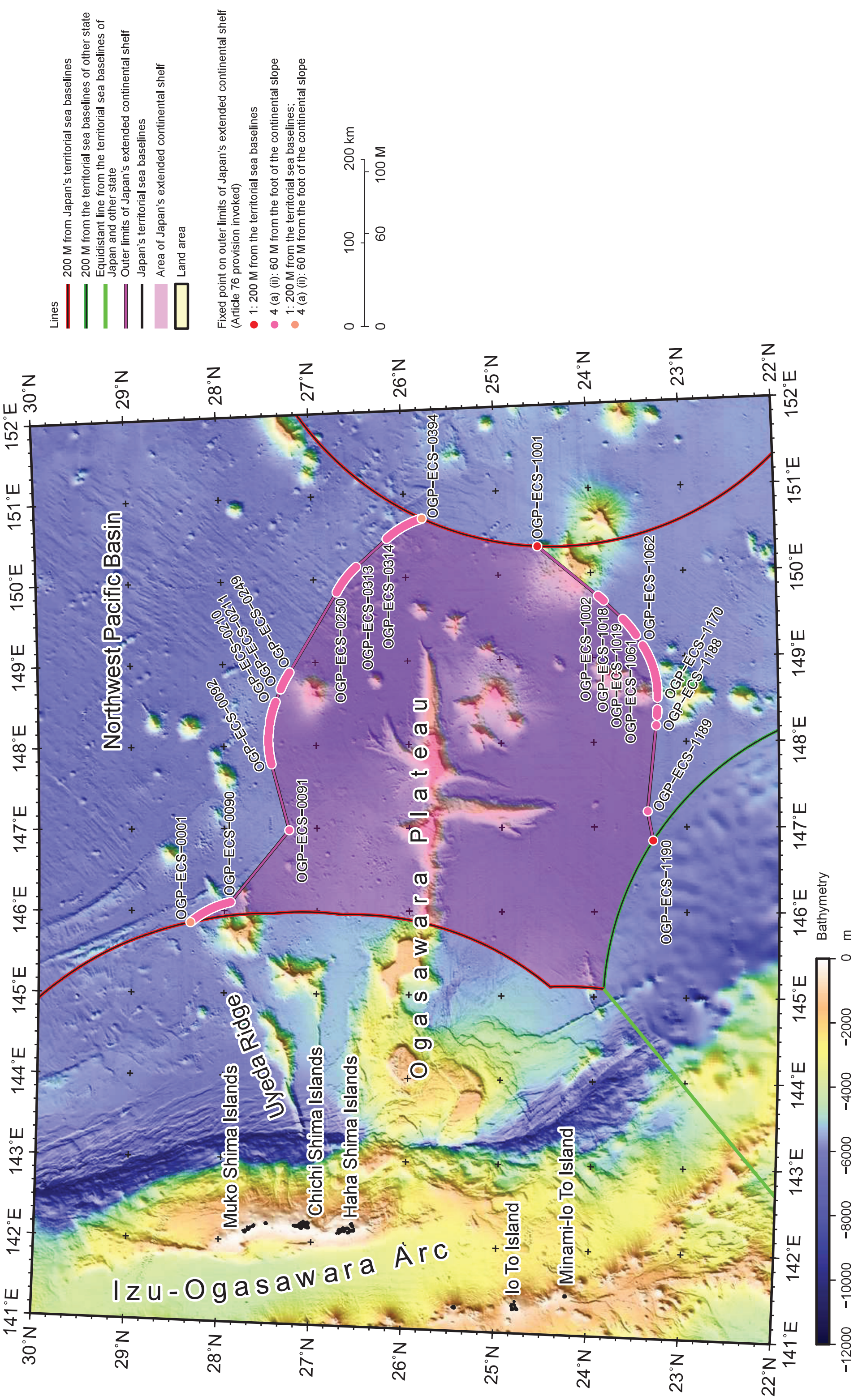


Figure 6.5. Map of the outer limits of the extended continental shelf in the Ogasawara Plateau region including provisions of article 76 of the Convention invoked.

6.6. The Southern Oki-Daito Ridge Region

This section describes the outer limits of the extended continental shelf in the Southern Oki-Daito Ridge region.

The continental margin in this region comprises the Oki-Daito Ridge and the Oki-Daito Rise, which together form a natural prolongation of Japan's land mass on the Ridge represented by Oki-Daito Shima Island.

The outer limits of the extended continental shelf in this region are defined by the straight lines not exceeding 60 M in length that connect 588 fixed points. The points can be grouped into the following types.

- 586 points are located on the formulae lines 60 M from the foot of the continental slope (paragraph 4(a)(ii), article 76).
- 2 points are located on the 200 M line from Japan's territorial sea baselines (paragraph 1, article 76).

A list of the coordinates of these fixed points in this region is provided in Table 6 of the appendix of this executive summary.

Figure 6.6 shows the outer limits of the extended continental shelf and relevant information for this region.

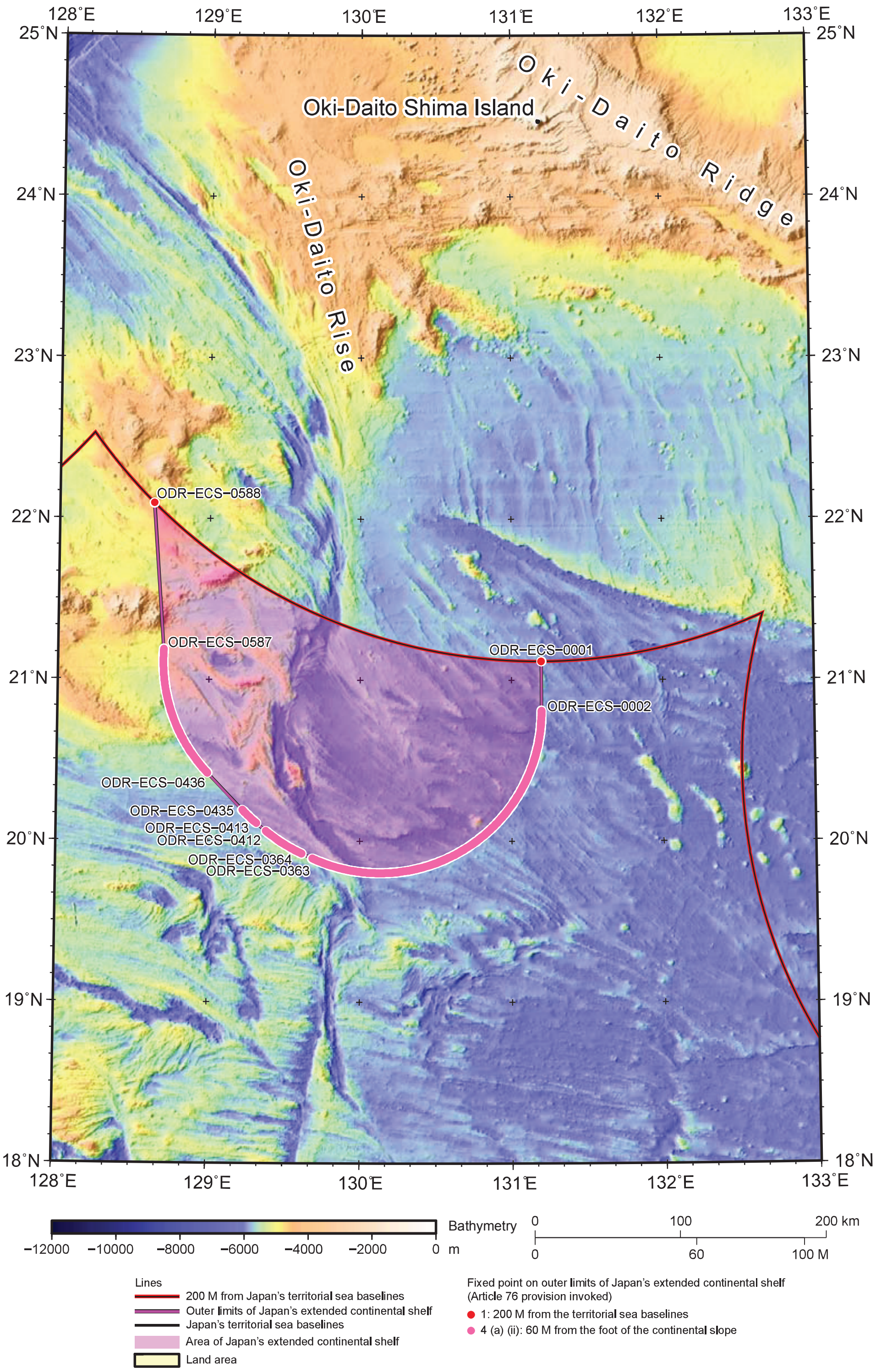


Figure 6.6. Map of the outer limits of the extended continental shelf in the Southern Oki-Daito Ridge region including provisions of article 76 of the Convention invoked.

6.7. The Shikoku Basin Region

This section describes the range of the extended continental shelf in the Shikoku Basin region.

The continental margin in this region consists of two parts. The eastern part comprises the Izu-Ogasawara Arc, which forms a natural prolongation of Japan's land mass on the Arc represented by islands such as Tori Shima Island. The western part comprises the Kyushu-Palau, Daito and Oki-Daito Ridges, which together form a natural prolongation of Japan's land mass on the Ridges represented by islands such as Kita-Daito Shima Island, Oki-Daito Shima Island and Oki-no-Tori Shima Island.

The area enclosed by 200 M lines from Japan's territorial sea baselines, in both the west and east, covers most of the Shikoku Basin region with only a small central area remaining (Figure 6.7). However, the continental shelf in this region extends beyond the 200 M both from the west and east, and these overlap with no gap. The entire area outside the 200 M lines from Japan's territorial sea baselines in the middle of the Shikoku Basin region is, therefore, part of the extended continental shelf of Japan.

Figure 6.7 shows the range of the extended continental shelf and relevant information for this region.

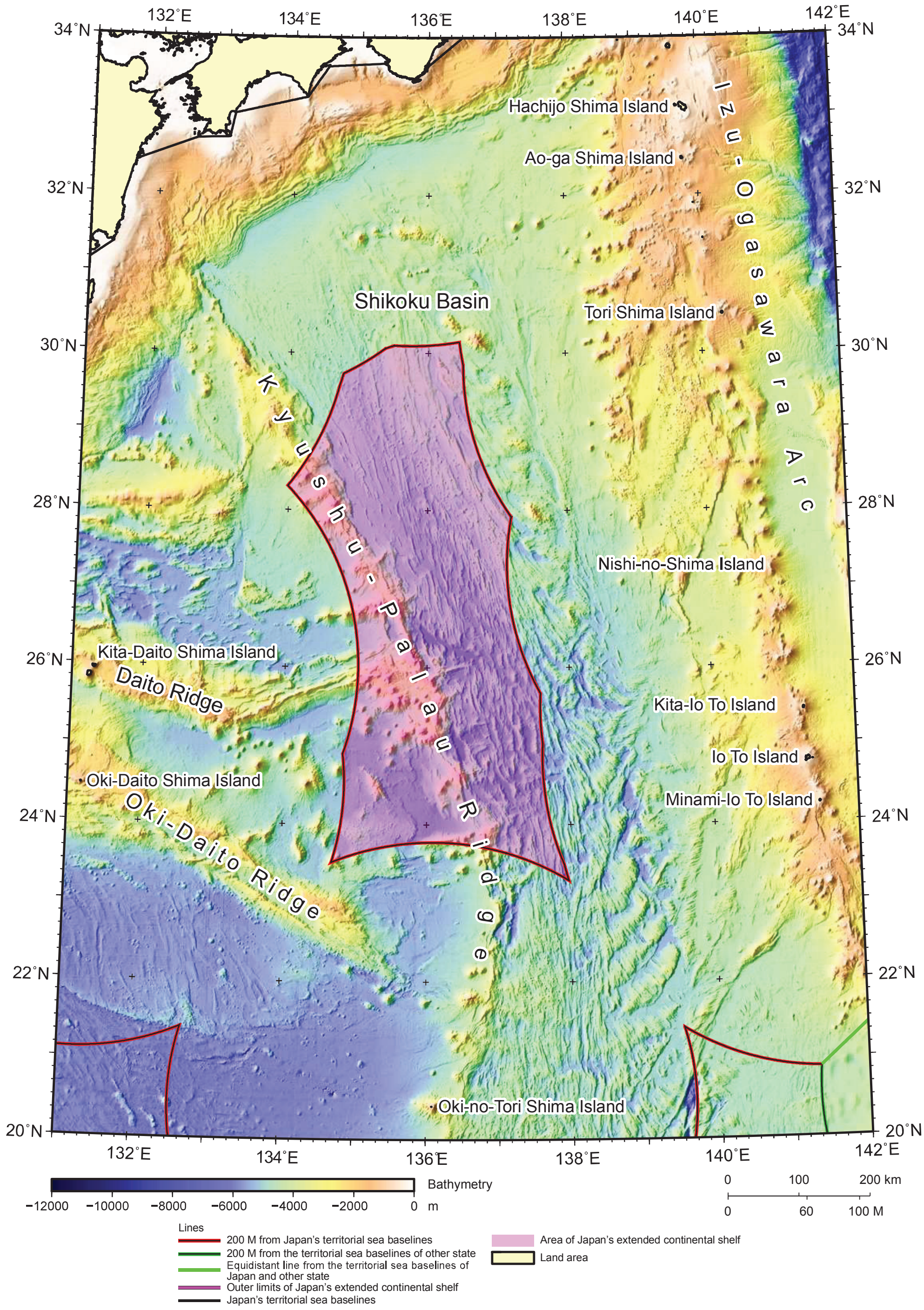


Figure 6.7. Map of the range of the extended continental shelf in the Shikoku Basin region.

APPENDIX

Lists of coordinates defining the outer limits of Japan’s extended continental shelf

The coordinates of fixed points defining the outer limits of Japan’s extended continental shelf are provided in the lists, together with the provisions invoked for the establishment of each point. These data are provided for all areas except the Shikoku Basin region.

All coordinates of the fixed points relate to the WGS84 geodetic reference system.

Concerning the Shikoku Basin region, the entire area outside the 200 M lines from Japan's territorial sea baselines in the middle of the region is part of the extended continental shelf of Japan as described in section 6.7 of this executive summary.

The following abbreviations are used in each table.

- FOS: Foot of the continental slope.
- TSB: Territorial sea baselines.
- DEP: 2500 metre isobath.

The Southern Kyushu-Palau Ridge region

Table 1. Lists of the coordinates of fixed points defining the outer limits of the extended continental shelf in the Southern Kyushu-Palau Ridge region

(a) Eastern limit

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
KPR-ECS-0001	17.10359567	136.61232995	1: 200 M from TSB	17.8514284
KPR-ECS-0002	16.80978091	136.55621583	4(a)(ii): 60 M from FOS	0.0530473
KPR-ECS-0003	16.80890785	136.55604892	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0004	16.80339625	136.55497618	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0005	16.79789050	136.55387156	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0006	16.79239077	136.55273510	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0007	16.78689723	136.55156685	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0008	16.78141005	136.55036683	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0009	16.77592940	136.54913510	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0010	16.77045545	136.54787169	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0011	16.76498837	136.54657664	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0012	16.75952833	136.54525000	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0013	16.75407551	136.54389181	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0014	16.74863006	136.54250211	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0015	16.74319216	136.54108096	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0016	16.73776198	136.53962839	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0017	16.73233969	136.53814446	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0018	16.72692545	136.53662921	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0019	16.72151944	136.53508270	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0020	16.71612182	136.53350497	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0021	16.71073275	136.53189608	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0022	16.70535241	136.53025607	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0023	16.69998097	136.52858501	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0024	16.69461859	136.52688295	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0025	16.68926543	136.52514994	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0026	16.68392167	136.52338603	4(a)(ii): 60 M from FOS	0.3096829
KPR-ECS-0027	16.67899151	136.52172844	4(a)(ii): 60 M from FOS	60.0000000
KPR-ECS-0028	15.67698501	136.45383985	4(a)(ii): 60 M from FOS	0.2604923
KPR-ECS-0029	15.67269812	136.45465921	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0030	15.66717865	136.45568489	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-0031	15.66165370	136.45667869	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0032	15.65612346	136.45764058	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0033	15.65058810	136.45857053	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0034	15.64504778	136.45946852	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0035	15.63950269	136.46033451	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0036	15.63395299	136.46116849	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0037	15.62839886	136.46197044	4(a)(ii): 60 M from FOS	0.3350863
KPR-ECS-0038	15.62284046	136.46274032	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0039	15.61727799	136.46347812	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0040	15.61171160	136.46418382	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0041	15.60614148	136.46485739	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0042	15.60056779	136.46549882	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0043	15.59499071	136.46610810	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0044	15.58941042	136.46668520	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0045	15.58382709	136.46723011	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0046	15.57824089	136.46774282	4(a)(ii): 60 M from FOS	0.3350857

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
KPR-ECS-0047	15.57265200	136.46822331	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0048	15.56706060	136.46867157	4(a)(ii): 60 M from FOS	0.3350863
KPR-ECS-0049	15.56146684	136.46908759	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-0050	15.55587093	136.46947136	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-0051	15.55027301	136.46982287	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0052	15.54467328	136.47014211	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0053	15.53907191	136.47042907	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0054	15.53346906	136.47068374	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0055	15.52786492	136.47090613	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-0056	15.52225967	136.47109623	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0057	15.51665346	136.47125403	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0058	15.51104649	136.47137953	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0059	15.50543892	136.47147274	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0060	15.49983093	136.47153364	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0061	15.49422270	136.47156224	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0062	15.48861439	136.47155855	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-0063	15.48300620	136.47152256	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0064	15.47739828	136.47145428	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0065	15.47179081	136.47135372	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0066	15.46618397	136.47122087	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0067	15.46057794	136.47105575	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0068	15.45497289	136.47085837	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0069	15.44936899	136.47062872	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-0070	15.44376641	136.47036683	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0071	15.43816534	136.47007271	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0072	15.43256595	136.46974636	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0073	15.42696841	136.46938779	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0074	15.42137290	136.46899703	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0075	15.41577958	136.46857408	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0076	15.41018864	136.46811897	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0077	15.40460025	136.46763170	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0078	15.39901458	136.46711230	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0079	15.39343181	136.46656079	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0080	15.38785211	136.46597718	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0081	15.38227565	136.46536150	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0082	15.37670261	136.46471376	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0083	15.37113316	136.46403400	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0084	15.36556748	136.46332223	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0085	15.36000574	136.46257847	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0086	15.35444810	136.46180276	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0087	15.34889475	136.46099513	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0088	15.34334586	136.46015559	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0089	15.33780160	136.45928417	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0090	15.33226214	136.45838092	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0091	15.32672765	136.45744585	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0092	15.32119831	136.45647900	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0093	15.31567429	136.45548040	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-0094	15.31015577	136.45445009	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0095	15.30464290	136.45338810	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0096	15.29913587	136.45229446	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0097	15.29363484	136.45116921	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0098	15.28813999	136.45001240	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0099	15.28265148	136.44882405	4(a)(ii): 60 M from FOS	0.3350860

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
KPR-ECS-0100	15.27716949	136.44760420	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0101	15.27169419	136.44635291	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0102	15.26622575	136.44507020	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0103	15.26076434	136.44375612	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0104	15.25531013	136.44241072	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0105	15.24986328	136.44103404	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0106	15.24442397	136.43962612	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0107	15.23899237	136.43818700	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0108	15.23356864	136.43671675	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0109	15.22815295	136.43521540	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0110	15.22274548	136.43368300	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0111	15.21734638	136.43211961	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0112	15.21195584	136.43052527	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0113	15.20657400	136.42890004	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0114	15.20120105	136.42724397	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0115	15.19583715	136.42555711	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0116	15.19048247	136.42383951	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0117	15.18513716	136.42209125	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0118	15.17980140	136.42031236	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0119	15.17447536	136.41850290	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0120	15.16915920	136.41666295	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-0121	15.16385307	136.41479255	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0122	15.15855716	136.41289176	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0123	15.15327162	136.41096065	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0124	15.14799662	136.40899928	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0125	15.14273232	136.40700772	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0126	15.13747888	136.40498601	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0127	15.13223647	136.40293424	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0128	15.12700525	136.40085247	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0129	15.12178538	136.39874076	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0130	15.11657702	136.39659918	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0131	15.11138034	136.39442780	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0132	15.10619550	136.39222668	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0133	15.10102266	136.38999591	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0134	15.09586197	136.38773555	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0135	15.09071360	136.38544567	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0136	15.08557771	136.38312635	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0137	15.08045446	136.38077766	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0138	15.07534400	136.37839967	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0139	15.07024650	136.37599247	4(a)(ii): 60 M from FOS	0.3350863
KPR-ECS-0140	15.06516210	136.37355612	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0141	15.06009098	136.37109071	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0142	15.05503329	136.36859631	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0143	15.04998918	136.36607300	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0144	15.04495881	136.36352087	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0145	15.03994234	136.36093999	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0146	15.03493992	136.35833044	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0147	15.02995171	136.35569232	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0148	15.02497786	136.35302570	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0149	15.02001852	136.35033066	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0150	15.01507386	136.34760730	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0151	15.01014401	136.34485570	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0152	15.00522914	136.34207594	4(a)(ii): 60 M from FOS	0.3350856

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
KPR-ECS-0153	15.00032940	136.33926812	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0154	14.99544494	136.33643231	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0155	14.99057591	136.33356863	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0156	14.98572246	136.33067714	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0157	14.98088474	136.32775795	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0158	14.97606290	136.32481114	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0159	14.97125710	136.32183682	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0160	14.96646747	136.31883507	4(a)(ii): 60 M from FOS	0.1717986
KPR-ECS-0161	14.96401815	136.31728547	4(a)(ii): 60 M from FOS	33.1754463
KPR-ECS-0162	14.49126566	136.01797723	4(a)(ii): 60 M from FOS	59.9999997
KPR-ECS-0163	13.50401743	136.20695278	4(a)(ii): 60 M from FOS	0.0495941
KPR-ECS-0164	13.50335473	136.20746379	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0165	13.49886633	136.21090172	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0166	13.49435917	136.21431385	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0167	13.48983338	136.21770008	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0168	13.48528911	136.22106031	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-0169	13.48072651	136.22439442	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0170	13.47614571	136.22770233	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0171	13.47154685	136.23098391	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0172	13.46693010	136.23423909	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0173	13.46229558	136.23746774	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0174	13.45764344	136.24066978	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0175	13.45297384	136.24384510	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0176	13.44828691	136.24699361	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0177	13.44358280	136.25011521	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0178	13.43886167	136.25320980	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0179	13.43412365	136.25627728	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0180	13.42936891	136.25931757	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0181	13.42459758	136.26233056	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0182	13.41980982	136.26531618	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0183	13.41500578	136.26827431	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0184	13.41018561	136.27120488	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0185	13.40534945	136.27410779	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0186	13.40049747	136.27698295	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0187	13.39562981	136.27983027	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0188	13.39074663	136.28264968	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0189	13.38584808	136.28544107	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0190	13.38093431	136.28820436	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0191	13.37600548	136.29093948	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0192	13.37106174	136.29364633	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0193	13.36610325	136.29632483	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0194	13.36113016	136.29897490	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0195	13.35614263	136.30159646	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0196	13.35114081	136.30418943	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0197	13.34612487	136.30675372	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-0198	13.34109495	136.30928927	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-0199	13.33605123	136.31179598	4(a)(ii): 60 M from FOS	0.3350863
KPR-ECS-0200	13.33099384	136.31427380	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0201	13.32592296	136.31672263	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-0202	13.32083875	136.31914240	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0203	13.31574135	136.32153305	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0204	13.31063094	136.32389449	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0205	13.30550767	136.32622666	4(a)(ii): 60 M from FOS	0.3350860

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
KPR-ECS-0206	13.30037170	136.32852949	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0207	13.29522320	136.33080290	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0208	13.29006232	136.33304682	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0209	13.28488922	136.33526119	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0210	13.27970408	136.33744593	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0211	13.27450704	136.33960099	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0212	13.26929828	136.34172630	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0213	13.26407796	136.34382178	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0214	13.25884624	136.34588739	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0215	13.25360328	136.34792305	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0216	13.24834925	136.34992871	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0217	13.24308431	136.35190429	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0218	13.23780863	136.35384975	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0219	13.23252237	136.35576503	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0220	13.22722570	136.35765006	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0221	13.22191879	136.35950479	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0222	13.21660180	136.36132916	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0223	13.21127489	136.36312312	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0224	13.20593824	136.36488662	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0225	13.20059201	136.36661959	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0226	13.19523636	136.36832199	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0227	13.18987148	136.36999377	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0228	13.18449751	136.37163488	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0229	13.17911464	136.37324526	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0230	13.17372303	136.37482488	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0231	13.16832284	136.37637367	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0232	13.16291426	136.37789160	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0233	13.15749744	136.37937862	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0234	13.15207256	136.38083469	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0235	13.14663978	136.38225975	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0236	13.14119928	136.38365378	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0237	13.13575123	136.38501672	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0238	13.13029579	136.38634855	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0239	13.12483314	136.38764921	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0240	13.11936345	136.38891866	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0241	13.11388689	136.39015689	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0242	13.10840362	136.39136383	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0243	13.10291383	136.39253947	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0244	13.09741769	136.39368376	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-0245	13.09191535	136.39479667	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0246	13.08640701	136.39587817	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0247	13.08089282	136.39692822	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0248	13.07537297	136.39794680	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0249	13.06984762	136.39893388	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0250	13.06431694	136.39988943	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0251	13.05878112	136.40081341	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-0252	13.05324031	136.40170581	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0253	13.04769471	136.40256660	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0254	13.04214447	136.40339575	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0255	13.03658978	136.40419324	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0256	13.03103080	136.40495904	4(a)(ii): 60 M from FOS	0.3350863
KPR-ECS-0257	13.02546770	136.40569314	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0258	13.01990068	136.40639551	4(a)(ii): 60 M from FOS	0.3350857

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
KPR-ECS-0259	13.01432989	136.40706613	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0260	13.00875551	136.40770499	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0261	13.00317771	136.40831207	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0262	12.99759668	136.40888735	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-0263	12.99201257	136.40943081	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0264	12.98642558	136.40994244	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0265	12.98083587	136.41042223	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0266	12.97524361	136.41087016	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0267	12.96964899	136.41128622	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0268	12.96405217	136.41167040	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0269	12.95845333	136.41202269	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0270	12.95285264	136.41234309	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0271	12.94725029	136.41263157	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0272	12.94164644	136.41288815	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0273	12.93604127	136.41311280	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0274	12.93043495	136.41330553	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0275	12.92482767	136.41346634	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0276	12.91921959	136.41359521	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0277	12.91361088	136.41369215	4(a)(ii): 60 M from FOS	0.1186201
KPR-ECS-0278	12.91162529	136.41371882	4(a)(ii): 60 M from FOS	6.7334506
KPR-ECS-0279	12.79891163	136.41511536	4(a)(ii): 60 M from FOS	0.2088463
KPR-ECS-0280	12.79541559	136.41515223	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-0281	12.78980613	136.41518550	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-0282	12.78419656	136.41518685	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0283	12.77858707	136.41515628	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0284	12.77297784	136.41509380	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0285	12.76736903	136.41499941	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0286	12.76176083	136.41487311	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0287	12.75615340	136.41471492	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-0288	12.75054693	136.41452484	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0289	12.74494158	136.41430287	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-0290	12.73933753	136.41404903	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0291	12.73373496	136.41376333	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0292	12.72813404	136.41344578	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-0293	12.72253495	136.41309638	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-0294	12.71693785	136.41271516	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-0295	12.71134293	136.41230212	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-0296	12.70575036	136.41185729	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-0297	12.70016031	136.41138067	4(a)(ii): 60 M from FOS	0.0352241
KPR-ECS-0298	12.69957284	136.41132873	4(a)(ii): 60 M from FOS	10.8416859
KPR-ECS-0299	12.51875756	136.39529556	1: 200 M from TSB	N/A

(b) Western limit

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
KPR-ECS-1001	11.33047817	133.38631274	1: 200 M from TSB	43.2566495
KPR-ECS-1002	11.94420799	132.99630213	4(a)(ii): 60 M from FOS	0.0004433
KPR-ECS-1003	11.94421428	132.99629813	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1004	11.94897469	132.99328376	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1005	11.95375156	132.99029633	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1006	11.95854474	132.98733593	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1007	11.96335410	132.98440266	4(a)(ii): 60 M from FOS	0.3350857

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
KPR-ECS-1008	11.96817948	132.98149661	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1009	11.97302074	132.97861787	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1010	11.97787771	132.97576653	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1011	11.98275025	132.97294268	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1012	11.98763821	132.97014641	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1013	11.99254144	132.96737781	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-1014	11.99745978	132.96463697	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1015	12.00239309	132.96192396	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1016	12.00734121	132.95923889	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1017	12.01230398	132.95658182	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1018	12.01728126	132.95395286	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1019	12.02227288	132.95135207	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1020	12.02727870	132.94877954	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1021	12.03229855	132.94623536	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1022	12.03733229	132.94371960	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1023	12.04237975	132.94123234	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1024	12.04744078	132.93877367	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1025	12.05251522	132.93634365	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1026	12.05760292	132.93394237	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1027	12.06270371	132.93156991	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1028	12.06781745	132.92922633	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1029	12.07294396	132.92691172	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1030	12.07808309	132.92462614	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1031	12.08323468	132.92236966	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1032	12.08839857	132.92014237	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1033	12.09357461	132.91794433	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1034	12.09876262	132.91577561	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1035	12.10396245	132.91363628	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1036	12.10917394	132.91152641	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1037	12.11439692	132.90944606	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1038	12.11963124	132.90739531	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1039	12.12487672	132.90537421	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1040	12.13013322	132.90338283	4(a)(ii): 60 M from FOS	0.1429943
KPR-ECS-1041	12.13237968	132.90254209	4(a)(ii): 60 M from FOS	12.7779398
KPR-ECS-1042	12.33319883	132.82759934	4(a)(ii): 60 M from FOS	0.2054027
KPR-ECS-1043	12.33642879	132.82639935	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1044	12.34170662	132.82446582	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1045	12.34699496	132.82256222	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1046	12.35229366	132.82068861	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1047	12.35760255	132.81884505	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1048	12.36292146	132.81703160	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1049	12.36825023	132.81524832	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1050	12.37358869	132.81349527	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1051	12.37893668	132.81177249	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1052	12.38429403	132.81008005	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1053	12.38966058	132.80841801	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1054	12.39503615	132.80678641	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1055	12.40042059	132.80518530	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-1056	12.40581371	132.80361475	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1057	12.41121537	132.80207479	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1058	12.41662538	132.80056549	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1059	12.42204358	132.79908688	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1060	12.42746980	132.79763902	4(a)(ii): 60 M from FOS	0.3350856

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
KPR-ECS-1061	12.43290387	132.79622195	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1062	12.43834563	132.79483572	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1063	12.44379490	132.79348037	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1064	12.44925151	132.79215595	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1065	12.45471530	132.79086250	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1066	12.46018610	132.78960007	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1067	12.46566373	132.78836869	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1068	12.47114802	132.78716840	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1069	12.47663881	132.78599925	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1070	12.48213592	132.78486127	4(a)(ii): 60 M from FOS	0.1033103
KPR-ECS-1071	12.48383198	132.78451671	4(a)(ii): 60 M from FOS	36.0629321
KPR-ECS-1072	13.07594101	132.66446696	4(a)(ii): 60 M from FOS	0.0000018
KPR-ECS-1073	13.07594104	132.66446696	4(a)(ii): 60 M from FOS; 5: 100 M from DEP	17.9560247
KPR-ECS-1074	13.37589323	132.64455290	5: 100 M from DEP	55.5372694
KPR-ECS-1075	14.29842012	132.52696169	5: 100 M from DEP	0.3279930
KPR-ECS-1076	14.30386915	132.52627379	5: 100 M from DEP	0.4362705
KPR-ECS-1077	14.31112037	132.52538715	5: 100 M from DEP	0.4362702
KPR-ECS-1078	14.31837528	132.52453290	5: 100 M from DEP	0.4362699
KPR-ECS-1079	14.32563374	132.52371105	5: 100 M from DEP	0.4362706
KPR-ECS-1080	14.33289563	132.52292162	5: 100 M from DEP	0.4362705
KPR-ECS-1081	14.34016080	132.52216464	5: 100 M from DEP	0.4362703
KPR-ECS-1082	14.34742911	132.52144012	5: 100 M from DEP	0.4362700
KPR-ECS-1083	14.35470042	132.52074807	5: 100 M from DEP	0.4362708
KPR-ECS-1084	14.36197461	132.52008851	5: 100 M from DEP	0.4362702
KPR-ECS-1085	14.36925152	132.51946147	5: 100 M from DEP	0.4362701
KPR-ECS-1086	14.37653102	132.51886695	5: 100 M from DEP	0.4362700
KPR-ECS-1087	14.38381297	132.51830496	5: 100 M from DEP	0.4362703
KPR-ECS-1088	14.39109724	132.51777553	5: 100 M from DEP	0.4362706
KPR-ECS-1089	14.39838369	132.51727866	5: 100 M from DEP	0.4362701
KPR-ECS-1090	14.40567217	132.51681437	5: 100 M from DEP	0.4362702
KPR-ECS-1091	14.41296255	132.51638267	5: 100 M from DEP	0.4362707
KPR-ECS-1092	14.42025470	132.51598357	5: 100 M from DEP	0.4362700
KPR-ECS-1093	14.42754846	132.51561708	5: 100 M from DEP	0.4362704
KPR-ECS-1094	14.43484371	132.51528321	5: 100 M from DEP	0.4362701
KPR-ECS-1095	14.44214030	132.51498197	5: 100 M from DEP	0.4362703
KPR-ECS-1096	14.44943810	132.51471338	5: 100 M from DEP	0.4362705
KPR-ECS-1097	14.45673697	132.51447743	5: 100 M from DEP	0.4362700
KPR-ECS-1098	14.46403676	132.51427414	5: 100 M from DEP	0.4362706
KPR-ECS-1099	14.47133735	132.51410351	5: 100 M from DEP	0.4362705
KPR-ECS-1100	14.47863859	132.51396555	5: 100 M from DEP	0.4362698
KPR-ECS-1101	14.48594033	132.51386027	5: 100 M from DEP	0.4362708
KPR-ECS-1102	14.49324246	132.51378767	5: 100 M from DEP	0.4362699
KPR-ECS-1103	14.50054481	132.51374775	5: 100 M from DEP	0.4362702
KPR-ECS-1104	14.50784726	132.51374052	5: 100 M from DEP	0.4362704
KPR-ECS-1105	14.51514967	132.51376599	5: 100 M from DEP	0.4362705
KPR-ECS-1106	14.52245190	132.51382415	5: 100 M from DEP	0.4362700
KPR-ECS-1107	14.52975380	132.51391500	5: 100 M from DEP	0.4362706
KPR-ECS-1108	14.53705525	132.51403856	5: 100 M from DEP	0.4362705
KPR-ECS-1109	14.54435610	132.51419481	5: 100 M from DEP	0.4362698
KPR-ECS-1110	14.55165620	132.51438377	5: 100 M from DEP	0.4362708
KPR-ECS-1111	14.55895544	132.51460542	5: 100 M from DEP	0.4362700
KPR-ECS-1112	14.56625365	132.51485978	5: 100 M from DEP	0.4362702

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
KPR-ECS-1113	14.57355071	132.51514683	5: 100 M from DEP	0.4362705
KPR-ECS-1114	14.58084648	132.51546657	5: 100 M from DEP	0.4362700
KPR-ECS-1115	14.58814081	132.51581901	5: 100 M from DEP	0.4362707
KPR-ECS-1116	14.59543358	132.51620414	5: 100 M from DEP	0.4362701
KPR-ECS-1117	14.60272463	132.51662195	5: 100 M from DEP	0.4362701
KPR-ECS-1118	14.61001383	132.51707244	5: 100 M from DEP	0.4362706
KPR-ECS-1119	14.61730105	132.51755560	5: 100 M from DEP	0.4362704
KPR-ECS-1120	14.62458614	132.51807143	5: 100 M from DEP	0.4362702
KPR-ECS-1121	14.63186896	132.51861993	5: 100 M from DEP	0.4362704
KPR-ECS-1122	14.63914938	132.51920108	5: 100 M from DEP	0.4362700
KPR-ECS-1123	14.64642725	132.51981487	5: 100 M from DEP	0.4362702
KPR-ECS-1124	14.65370244	132.52046131	5: 100 M from DEP	0.4362708
KPR-ECS-1125	14.66097482	132.52114037	5: 100 M from DEP	0.4362701
KPR-ECS-1126	14.66824423	132.52185205	5: 100 M from DEP	0.4362700
KPR-ECS-1127	14.67551054	132.52259635	5: 100 M from DEP	0.4362704
KPR-ECS-1128	14.68277362	132.52337324	5: 100 M from DEP	0.4362706
KPR-ECS-1129	14.69003333	132.52418271	5: 100 M from DEP	0.4362703
KPR-ECS-1130	14.69728952	132.52502477	5: 100 M from DEP	0.4362703
KPR-ECS-1131	14.70454206	132.52589938	5: 100 M from DEP	0.4362703
KPR-ECS-1132	14.71179081	132.52680654	5: 100 M from DEP	0.4362703
KPR-ECS-1133	14.71903563	132.52774624	5: 100 M from DEP	0.4362700
KPR-ECS-1134	14.72627638	132.52871845	5: 100 M from DEP	0.4362703
KPR-ECS-1135	14.73351293	132.52972317	5: 100 M from DEP	0.4362705
KPR-ECS-1136	14.74074514	132.53076038	5: 100 M from DEP	0.4362699
KPR-ECS-1137	14.74797286	132.53183006	5: 100 M from DEP	0.4362704
KPR-ECS-1138	14.75519597	132.53293219	5: 100 M from DEP	0.4362703
KPR-ECS-1139	14.76241432	132.53406677	5: 100 M from DEP	0.4362705
KPR-ECS-1140	14.76962778	132.53523376	5: 100 M from DEP	0.4362706
KPR-ECS-1141	14.77683621	132.53643315	5: 100 M from DEP	0.4362699
KPR-ECS-1142	14.78403946	132.53766491	5: 100 M from DEP	0.4362704
KPR-ECS-1143	14.79123741	132.53892904	5: 100 M from DEP	0.4362701
KPR-ECS-1144	14.79842991	132.54022551	5: 100 M from DEP	0.1963221
KPR-ECS-1145	14.80166473	132.54081946	5: 100 M from DEP	0.6136522
KPR-ECS-1146	14.81177363	132.54268928	5: 100 M from DEP	0.1836958
KPR-ECS-1147	14.81479906	132.54325273	5: 100 M from DEP	0.4362707
KPR-ECS-1148	14.82198027	132.54461383	5: 100 M from DEP	0.4362698
KPR-ECS-1149	14.82915561	132.54600720	5: 100 M from DEP	0.4362707
KPR-ECS-1150	14.83632497	132.54743283	5: 100 M from DEP	0.4362701
KPR-ECS-1151	14.84348819	132.54889068	5: 100 M from DEP	0.4362705
KPR-ECS-1152	14.85064515	132.55038073	5: 100 M from DEP	0.4362702
KPR-ECS-1153	14.85779570	132.55190296	5: 100 M from DEP	0.4362702
KPR-ECS-1154	14.86493971	132.55345734	5: 100 M from DEP	0.4362705
KPR-ECS-1155	14.87207705	132.55504384	5: 100 M from DEP	0.4362702
KPR-ECS-1156	14.87920757	132.55666244	5: 100 M from DEP	0.4362701
KPR-ECS-1157	14.88633114	132.55831310	5: 100 M from DEP	0.4362705
KPR-ECS-1158	14.89344763	132.55999581	5: 100 M from DEP	0.4362701
KPR-ECS-1159	14.90055689	132.56171053	5: 100 M from DEP	0.4362706
KPR-ECS-1160	14.90765880	132.56345724	5: 100 M from DEP	0.1484519
KPR-ECS-1161	14.91007370	132.56405888	5: 100 M from DEP	59.9999999
KPR-ECS-1162	15.85939710	132.22650238	5: 350 M from TSB	0.2033092
KPR-ECS-1163	15.86150439	132.22374227	5: 350 M from TSB	0.7317700
KPR-ECS-1164	15.86910164	132.21381777	5: 350 M from TSB	0.7317701
KPR-ECS-1165	15.87671843	132.20390890	5: 350 M from TSB	0.7317703

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
KPR-ECS-1166	15.88435473	132.19401570	5: 350 M from TSB	0.7317699
KPR-ECS-1167	15.89201050	132.18413822	5: 350 M from TSB	0.7317703
KPR-ECS-1168	15.89968572	132.17427649	5: 350 M from TSB	0.7317701
KPR-ECS-1169	15.90738035	132.16443056	5: 350 M from TSB	0.7317703
KPR-ECS-1170	15.91509437	132.15460047	5: 350 M from TSB	0.7317699
KPR-ECS-1171	15.92282773	132.14478626	5: 350 M from TSB	0.7317703
KPR-ECS-1172	15.93058042	132.13498797	5: 350 M from TSB	0.7317702
KPR-ECS-1173	15.93835239	132.12520564	5: 350 M from TSB	0.7317701
KPR-ECS-1174	15.94614361	132.11543931	5: 350 M from TSB	0.7317705
KPR-ECS-1175	15.95395407	132.10568903	5: 350 M from TSB	0.7317698
KPR-ECS-1176	15.96178371	132.09595484	5: 350 M from TSB	0.7317701
KPR-ECS-1177	15.96963251	132.08623677	5: 350 M from TSB	0.7317701
KPR-ECS-1178	15.97750044	132.07653487	5: 350 M from TSB	0.7317702
KPR-ECS-1179	15.98538747	132.06684918	5: 350 M from TSB	0.7317705
KPR-ECS-1180	15.99329356	132.05717973	5: 350 M from TSB	0.7317700
KPR-ECS-1181	16.00121868	132.04752658	5: 350 M from TSB	0.7317697
KPR-ECS-1182	16.00916279	132.03788976	5: 350 M from TSB	0.7317703
KPR-ECS-1183	16.01712588	132.02826931	5: 350 M from TSB	0.7317702
KPR-ECS-1184	16.02510790	132.01866527	5: 350 M from TSB	0.7317703
KPR-ECS-1185	16.03310882	132.00907768	5: 350 M from TSB	0.7317697
KPR-ECS-1186	16.04112860	131.99950659	5: 350 M from TSB	0.7317708
KPR-ECS-1187	16.04916723	131.98995202	5: 350 M from TSB	0.7317696
KPR-ECS-1188	16.05722465	131.98041404	5: 350 M from TSB	0.7317706
KPR-ECS-1189	16.06530085	131.97089266	5: 350 M from TSB	0.7317701
KPR-ECS-1190	16.07339578	131.96138794	5: 350 M from TSB	0.7317698
KPR-ECS-1191	16.08150941	131.95189992	5: 350 M from TSB	0.7317704
KPR-ECS-1192	16.08964172	131.94242863	5: 350 M from TSB	0.7317703
KPR-ECS-1193	16.09779266	131.93297411	5: 350 M from TSB	0.7317699
KPR-ECS-1194	16.10596220	131.92353641	5: 350 M from TSB	0.7317701
KPR-ECS-1195	16.11415032	131.91411557	5: 350 M from TSB	0.4314140
KPR-ECS-1196	16.11898630	131.90856944	5: 350 M from TSB; 4(a)(ii): 60 M from FOS	0.1372682
KPR-ECS-1197	16.12035965	131.91047458	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1198	16.12369436	131.91513893	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1199	16.12700373	131.91982263	4(a)(ii): 60 M from FOS	0.3350863
KPR-ECS-1200	16.13028767	131.92452554	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1201	16.13354606	131.92924749	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1202	16.13677881	131.93398835	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1203	16.13998581	131.93874797	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1204	16.14316696	131.94352619	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1205	16.14632217	131.94832287	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1206	16.14945133	131.95313785	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1207	16.15255434	131.95797099	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1208	16.15563111	131.96282213	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1209	16.15868154	131.96769113	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1210	16.16170552	131.97257782	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1211	16.16470298	131.97748205	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1212	16.16767380	131.98240368	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1213	16.17061791	131.98734254	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1214	16.17353520	131.99229848	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1215	16.17642558	131.99727135	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1216	16.17928896	132.00226098	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1217	16.18212525	132.00726723	4(a)(ii): 60 M from FOS	0.3350859

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
KPR-ECS-1218	16.18493437	132.01228993	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1219	16.18771622	132.01732892	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1220	16.19047071	132.02238405	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1221	16.19319776	132.02745517	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1222	16.19589728	132.03254210	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1223	16.19856919	132.03764469	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-1224	16.20121340	132.04276277	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1225	16.20382983	132.04789620	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1226	16.20641839	132.05304480	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1227	16.20897901	132.05820841	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1228	16.21151160	132.06338688	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1229	16.21401609	132.06858003	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-1230	16.21649238	132.07378770	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1231	16.21894042	132.07900974	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1232	16.22136011	132.08424597	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1233	16.22375138	132.08949623	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1234	16.22611416	132.09476036	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1235	16.22844837	132.10003819	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1236	16.23075393	132.10532955	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1237	16.23303078	132.11063427	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1238	16.23527885	132.11595220	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-1239	16.23749805	132.12128315	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1240	16.23968833	132.12662697	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1241	16.24184960	132.13198348	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1242	16.24398182	132.13735252	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1243	16.24608489	132.14273392	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1244	16.24815877	132.14812750	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-1245	16.25020338	132.15353309	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1246	16.25221866	132.15895054	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1247	16.25420455	132.16437965	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1248	16.25616098	132.16982027	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1249	16.25808789	132.17527222	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1250	16.25998522	132.18073533	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1251	16.26185291	132.18620943	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1252	16.26369090	132.19169434	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1253	16.26549914	132.19718990	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1254	16.26727756	132.20269592	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1255	16.26902611	132.20821223	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1256	16.27074473	132.21373866	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1257	16.27243337	132.21927504	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1258	16.27409198	132.22482119	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1259	16.27572050	132.23037693	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1260	16.27731889	132.23594209	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1261	16.27888709	132.24151650	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1262	16.28042504	132.24709997	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1263	16.28193272	132.25269233	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-1264	16.28341005	132.25829340	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1265	16.28485701	132.26390301	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1266	16.28627354	132.26952099	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1267	16.28765960	132.27514714	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-1268	16.28901514	132.28078129	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1269	16.29034012	132.28642328	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1270	16.29163451	132.29207291	4(a)(ii): 60 M from FOS	0.3350858

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
KPR-ECS-1271	16.29289825	132.29773001	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-1272	16.29413131	132.30339439	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1273	16.29533365	132.30906589	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1274	16.29650523	132.31474433	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1275	16.29764602	132.32042951	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1276	16.29875597	132.32612126	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1277	16.29983506	132.33181941	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1278	16.30088324	132.33752377	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1279	16.30190050	132.34323416	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1280	16.30288678	132.34895040	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-1281	16.30384207	132.35467230	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1282	16.30476633	132.36039970	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1283	16.30565953	132.36613241	4(a)(ii): 60 M from FOS	0.0150624
KPR-ECS-1284	16.30569896	132.36639022	4(a)(ii): 60 M from FOS	60.0000000
KPR-ECS-1285	16.94656476	133.16816076	4(a)(ii): 60 M from FOS	59.9999996
KPR-ECS-1286	17.92592377	133.39860712	4(a)(ii): 60 M from FOS	0.0000012
KPR-ECS-1287	17.92592379	133.39860712	4(a)(ii): 60 M from FOS	5.7697681
KPR-ECS-1288	18.02174418	133.41094408	4(a)(ii): 60 M from FOS	0.0956769
KPR-ECS-1289	18.02333294	133.41115014	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1290	18.02889468	133.41189272	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1291	18.03445236	133.41266779	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1292	18.04000581	133.41347534	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-1293	18.04555484	133.41431534	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1294	18.05109930	133.41518778	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1295	18.05663901	133.41609263	4(a)(ii): 60 M from FOS	0.3350853
KPR-ECS-1296	18.06217378	133.41702986	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1297	18.06770346	133.41799945	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1298	18.07322786	133.41900137	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1299	18.07874682	133.42003559	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-1300	18.08426015	133.42110208	4(a)(ii): 60 M from FOS	0.3350860
KPR-ECS-1301	18.08976770	133.42220082	4(a)(ii): 60 M from FOS	0.3350862
KPR-ECS-1302	18.09526929	133.42333177	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-1303	18.10076473	133.42449489	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1304	18.10625387	133.42569016	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1305	18.11173653	133.42691754	4(a)(ii): 60 M from FOS	0.3350863
KPR-ECS-1306	18.11721255	133.42817700	4(a)(ii): 60 M from FOS	0.3350852
KPR-ECS-1307	18.12268173	133.42946849	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1308	18.12814393	133.43079199	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1309	18.13359896	133.43214745	4(a)(ii): 60 M from FOS	0.3350854
KPR-ECS-1310	18.13904665	133.43353483	4(a)(ii): 60 M from FOS	0.3350858
KPR-ECS-1311	18.14448684	133.43495410	4(a)(ii): 60 M from FOS	0.3350861
KPR-ECS-1312	18.14991936	133.43640521	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1313	18.15534403	133.43788812	4(a)(ii): 60 M from FOS	0.3350856
KPR-ECS-1314	18.16076068	133.43940278	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1315	18.16616914	133.44094916	4(a)(ii): 60 M from FOS	0.3350857
KPR-ECS-1316	18.17156925	133.44252720	4(a)(ii): 60 M from FOS	0.3350859
KPR-ECS-1317	18.17696084	133.44413686	4(a)(ii): 60 M from FOS	0.3350855
KPR-ECS-1318	18.18234373	133.44577809	4(a)(ii): 60 M from FOS	0.1735973
KPR-ECS-1319	18.18512896	133.44664076	4(a)(ii): 60 M from FOS; 1: 200 M from TSB	N/A

The Minami-Io To Island region

Table 2. List of the coordinates of fixed points defining the outer limits of the extended continental shelf in the Minami-Io To Island region

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MIT-ECS-0001	19.84764765	141.41905864	1: 200 M from TSB	28.6781436
MIT-ECS-0002	19.52299464	141.04600151	4(a)(ii): 60 M from FOS	0.2789223
MIT-ECS-0003	19.51932501	141.04296134	4(a)(ii): 60 M from FOS	0.3343446
MIT-ECS-0004	19.51494386	141.03929361	4(a)(ii): 60 M from FOS	59.9999998
MIT-ECS-0005	18.68983827	140.43781285	4(a)(ii): 60 M from FOS	0.1011589
MIT-ECS-0006	18.68838574	140.43690115	4(a)(ii): 60 M from FOS	0.3350863
MIT-ECS-0007	18.68358472	140.43386296	4(a)(ii): 60 M from FOS	0.3350855
MIT-ECS-0008	18.67879990	140.43079687	4(a)(ii): 60 M from FOS	0.3350856
MIT-ECS-0009	18.67403142	140.42770296	4(a)(ii): 60 M from FOS	0.3350860
MIT-ECS-0010	18.66927942	140.42458133	4(a)(ii): 60 M from FOS	0.3350854
MIT-ECS-0011	18.66454406	140.42143209	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0012	18.65982548	140.41825532	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0013	18.65512382	140.41505114	4(a)(ii): 60 M from FOS	0.3350859
MIT-ECS-0014	18.65043923	140.41181964	4(a)(ii): 60 M from FOS	0.3350858
MIT-ECS-0015	18.64577186	140.40856092	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0016	18.64112185	140.40527509	4(a)(ii): 60 M from FOS	0.3350858
MIT-ECS-0017	18.63648934	140.40196225	4(a)(ii): 60 M from FOS	0.3350855
MIT-ECS-0018	18.63187448	140.39862251	4(a)(ii): 60 M from FOS	0.3350860
MIT-ECS-0019	18.62727740	140.39525597	4(a)(ii): 60 M from FOS	0.3350854
MIT-ECS-0020	18.62269826	140.39186274	4(a)(ii): 60 M from FOS	0.3350859
MIT-ECS-0021	18.61813719	140.38844291	4(a)(ii): 60 M from FOS	0.3350858
MIT-ECS-0022	18.61359433	140.38499661	4(a)(ii): 60 M from FOS	0.3350859
MIT-ECS-0023	18.60906982	140.38152394	4(a)(ii): 60 M from FOS	0.3350855
MIT-ECS-0024	18.60456381	140.37802501	4(a)(ii): 60 M from FOS	0.3350856
MIT-ECS-0025	18.60007643	140.37449993	4(a)(ii): 60 M from FOS	0.3350859
MIT-ECS-0026	18.59560782	140.37094880	4(a)(ii): 60 M from FOS	0.3350860
MIT-ECS-0027	18.59115811	140.36737175	4(a)(ii): 60 M from FOS	0.3350854
MIT-ECS-0028	18.58672746	140.36376888	4(a)(ii): 60 M from FOS	0.3350859
MIT-ECS-0029	18.58231598	140.36014031	4(a)(ii): 60 M from FOS	0.3350858
MIT-ECS-0030	18.57792382	140.35648615	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0031	18.57355112	140.35280651	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0032	18.56919801	140.34910151	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0033	18.56486462	140.34537127	4(a)(ii): 60 M from FOS	0.3350858
MIT-ECS-0034	18.56055108	140.34161591	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0035	18.55625754	140.33783553	4(a)(ii): 60 M from FOS	0.3350854
MIT-ECS-0036	18.55198412	140.33403027	4(a)(ii): 60 M from FOS	0.3350860
MIT-ECS-0037	18.54773095	140.33020023	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0038	18.54349817	140.32634554	4(a)(ii): 60 M from FOS	0.3350859
MIT-ECS-0039	18.53928590	140.32246632	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0040	18.53509428	140.31856269	4(a)(ii): 60 M from FOS	0.3350856
MIT-ECS-0041	18.53092344	140.31463477	4(a)(ii): 60 M from FOS	0.3350860
MIT-ECS-0042	18.52677349	140.31068269	4(a)(ii): 60 M from FOS	0.3350856
MIT-ECS-0043	18.52264458	140.30670657	4(a)(ii): 60 M from FOS	0.3350856
MIT-ECS-0044	18.51853683	140.30270653	4(a)(ii): 60 M from FOS	0.3350858
MIT-ECS-0045	18.51445036	140.29868270	4(a)(ii): 60 M from FOS	0.3350855
MIT-ECS-0046	18.51038531	140.29463520	4(a)(ii): 60 M from FOS	0.3350858
MIT-ECS-0047	18.50634179	140.29056416	4(a)(ii): 60 M from FOS	0.3350858

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MIT-ECS-0048	18.50231993	140.28646971	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0049	18.49831986	140.28235197	4(a)(ii): 60 M from FOS	0.3350862
MIT-ECS-0050	18.49434169	140.27821107	4(a)(ii): 60 M from FOS	0.3350855
MIT-ECS-0051	18.49038556	140.27404715	4(a)(ii): 60 M from FOS	0.3350857
MIT-ECS-0052	18.48645158	140.26986033	4(a)(ii): 60 M from FOS	0.3350860
MIT-ECS-0053	18.48253987	140.26565074	4(a)(ii): 60 M from FOS	0.3350855
MIT-ECS-0054	18.47865056	140.26141852	4(a)(ii): 60 M from FOS	0.0075904
MIT-ECS-0055	18.47856272	140.26132239	4(a)(ii): 60 M from FOS; 5: 350 M from TSB	0.0711341
MIT-ECS-0056	18.47878651	140.26009728	5: 350 M from TSB	0.7317706
MIT-ECS-0057	18.48110196	140.24749691	5: 350 M from TSB	0.7317707
MIT-ECS-0058	18.48344161	140.23490128	5: 350 M from TSB	0.5041171
MIT-ECS-0059	18.48506747	140.22622693	5: 350 M from TSB	0.5756977
MIT-ECS-0060	18.48693657	140.21632335	5: 350 M from TSB	0.5180935
MIT-ECS-0061	18.48862981	140.20741295	5: 350 M from TSB	0.7317707
MIT-ECS-0062	18.49104202	140.19483181	5: 350 M from TSB	0.7317708
MIT-ECS-0063	18.49347841	140.18225561	5: 350 M from TSB	0.7317707
MIT-ECS-0064	18.49593895	140.16968440	5: 350 M from TSB	0.7317708
MIT-ECS-0065	18.49842365	140.15711823	5: 350 M from TSB	0.7317707
MIT-ECS-0066	18.50093249	140.14455715	5: 350 M from TSB	0.7317704
MIT-ECS-0067	18.50346545	140.13200121	5: 350 M from TSB	0.7317709
MIT-ECS-0068	18.50602254	140.11945045	5: 350 M from TSB	0.7317706
MIT-ECS-0069	18.50860373	140.10690493	5: 350 M from TSB	0.7317711
MIT-ECS-0070	18.51120903	140.09436469	5: 350 M from TSB	0.7317707
MIT-ECS-0071	18.51383841	140.08182979	5: 350 M from TSB	0.7317705
MIT-ECS-0072	18.51649188	140.06930028	5: 350 M from TSB	0.7317711
MIT-ECS-0073	18.51916941	140.05677619	5: 350 M from TSB	0.7317702
MIT-ECS-0074	18.52187100	140.04425760	5: 350 M from TSB	0.7317709
MIT-ECS-0075	18.52459664	140.03174453	5: 350 M from TSB	0.7317709
MIT-ECS-0076	18.52734631	140.01923704	5: 350 M from TSB	0.7317704
MIT-ECS-0077	18.53012001	140.00673519	5: 350 M from TSB	0.7317709
MIT-ECS-0078	18.53291772	139.99423901	5: 350 M from TSB	0.7317710
MIT-ECS-0079	18.53573944	139.98174856	5: 350 M from TSB	0.7317703
MIT-ECS-0080	18.53858515	139.96926390	5: 350 M from TSB	0.7317711
MIT-ECS-0081	18.54145483	139.95678505	5: 350 M from TSB	0.7317705
MIT-ECS-0082	18.54434849	139.94431209	5: 350 M from TSB	0.7317708
MIT-ECS-0083	18.54726611	139.93184505	5: 350 M from TSB	0.7317710
MIT-ECS-0084	18.55020767	139.91938398	5: 350 M from TSB	0.7317705
MIT-ECS-0085	18.55317316	139.90692894	5: 350 M from TSB	0.7317708
MIT-ECS-0086	18.55616258	139.89447997	5: 350 M from TSB	0.7317709
MIT-ECS-0087	18.55917591	139.88203712	5: 350 M from TSB	0.7317709
MIT-ECS-0088	18.56221314	139.86960044	5: 350 M from TSB	0.7317702
MIT-ECS-0089	18.56527425	139.85716999	5: 350 M from TSB	0.7317708
MIT-ECS-0090	18.56835924	139.84474580	5: 350 M from TSB	0.7317706
MIT-ECS-0091	18.57146809	139.83232793	5: 350 M from TSB	0.7317710
MIT-ECS-0092	18.57460079	139.81991642	5: 350 M from TSB	0.7317708
MIT-ECS-0093	18.57775733	139.80751133	5: 350 M from TSB	0.7317705
MIT-ECS-0094	18.58093770	139.79511271	5: 350 M from TSB	0.7317711
MIT-ECS-0095	18.58414187	139.78272059	5: 350 M from TSB	0.7317708
MIT-ECS-0096	18.58736985	139.77033504	5: 350 M from TSB	0.7317707
MIT-ECS-0097	18.59062161	139.75795610	5: 350 M from TSB	0.7317708
MIT-ECS-0098	18.59389715	139.74558382	5: 350 M from TSB	0.7317706
MIT-ECS-0099	18.59719644	139.73321825	5: 350 M from TSB	0.7317706

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MIT-ECS-0100	18.60051949	139.72085944	5: 350 M from TSB	0.7317707
MIT-ECS-0101	18.60386626	139.70850743	5: 350 M from TSB	0.7317706
MIT-ECS-0102	18.60723676	139.69616228	5: 350 M from TSB	0.7317708
MIT-ECS-0103	18.61063097	139.68382403	5: 350 M from TSB	0.7317709
MIT-ECS-0104	18.61404887	139.67149273	5: 350 M from TSB	0.7317705
MIT-ECS-0105	18.61749046	139.65916844	5: 350 M from TSB	0.7317709
MIT-ECS-0106	18.62095571	139.64685119	5: 350 M from TSB	0.7317708
MIT-ECS-0107	18.62444461	139.63454104	5: 350 M from TSB	0.7317706
MIT-ECS-0108	18.62795715	139.62223804	5: 350 M from TSB	0.7317705
MIT-ECS-0109	18.63149332	139.60994224	5: 350 M from TSB	0.7317712
MIT-ECS-0110	18.63505310	139.59765367	5: 350 M from TSB	0.7317701
MIT-ECS-0111	18.63863647	139.58537241	5: 350 M from TSB	0.7317709
MIT-ECS-0112	18.64224343	139.57309848	5: 350 M from TSB	0.7317709
MIT-ECS-0113	18.64587396	139.56083194	5: 350 M from TSB	0.7317707
MIT-ECS-0114	18.64952804	139.54857284	5: 350 M from TSB	0.7317705
MIT-ECS-0115	18.65320566	139.53632123	5: 350 M from TSB	0.7317709
MIT-ECS-0116	18.65690681	139.52407715	5: 350 M from TSB	0.7317709
MIT-ECS-0117	18.66063146	139.51184065	5: 350 M from TSB	0.7317707
MIT-ECS-0118	18.66437962	139.49961179	5: 350 M from TSB	0.7317706
MIT-ECS-0119	18.66815125	139.48739061	5: 350 M from TSB	0.7317711
MIT-ECS-0120	18.67194635	139.47517715	5: 350 M from TSB	0.7317709
MIT-ECS-0121	18.67576490	139.46297147	5: 350 M from TSB	0.7317706
MIT-ECS-0122	18.67960688	139.45077362	5: 350 M from TSB	0.7317708
MIT-ECS-0123	18.68347228	139.43858364	5: 350 M from TSB	0.7317704
MIT-ECS-0124	18.68736109	139.42640159	5: 350 M from TSB	0.7317710
MIT-ECS-0125	18.69127329	139.41422750	5: 350 M from TSB	0.7317708
MIT-ECS-0126	18.69520886	139.40206143	5: 350 M from TSB	0.7317707
MIT-ECS-0127	18.69916779	139.38990343	5: 350 M from TSB	0.7317704
MIT-ECS-0128	18.70315006	139.37775355	5: 350 M from TSB	0.5379873
MIT-ECS-0129	18.70609264	139.36882633	5: 350 M from TSB	0.5430993
MIT-ECS-0130	18.70907597	139.35981878	5: 350 M from TSB	0.4051638
MIT-ECS-0131	18.71130956	139.35310176	5: 350 M from TSB	0.7317705
MIT-ECS-0132	18.71536176	139.34097650	5: 350 M from TSB	0.7317710
MIT-ECS-0133	18.71943724	139.32885954	5: 350 M from TSB	0.5151026
MIT-ECS-0134	18.72231997	139.32033527	5: 350 M from TSB	0.5150920
MIT-ECS-0135	18.72521410	139.31181531	5: 350 M from TSB	0.4733272
MIT-ECS-0136	18.72788296	139.30398956	5: 350 M from TSB	0.7317705
MIT-ECS-0137	18.73202817	139.29189780	5: 350 M from TSB	0.7317706
MIT-ECS-0138	18.73619660	139.27981454	5: 350 M from TSB	0.7317710
MIT-ECS-0139	18.74038823	139.26773982	5: 350 M from TSB	0.7317706
MIT-ECS-0140	18.74460303	139.25567370	5: 350 M from TSB	0.7317707
MIT-ECS-0141	18.74884099	139.24361622	5: 350 M from TSB	0.7317710
MIT-ECS-0142	18.75310211	139.23156743	5: 350 M from TSB	0.7317708
MIT-ECS-0143	18.75738635	139.21952738	5: 350 M from TSB	0.7317705
MIT-ECS-0144	18.76169370	139.20749612	5: 350 M from TSB	0.7317709
MIT-ECS-0145	18.76602415	139.19547369	5: 350 M from TSB	0.7317708
MIT-ECS-0146	18.77037767	139.18346014	5: 350 M from TSB	0.1393696
MIT-ECS-0147	18.77120944	139.18117311	5: 350 M from TSB; 1: 200 M from TSB	N/A

The Minami-Tori Shima Island region

Table 3. List of the coordinates of fixed points defining the outer limits of the extended continental shelf in the Minami-Tori Shima Island region

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0001	21.82257854	151.52138371	1: 200 M from TSB	5.9175508
MTS-ECS-0002	21.87449862	151.43112344	4(a)(ii): 60 M from FOS	0.0026236
MTS-ECS-0003	21.87452163	151.43108341	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0004	21.87747361	151.42597930	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0005	21.88045199	151.42089273	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0006	21.88345667	151.41582384	4(a)(ii): 60 M from FOS	0.1771896
MTS-ECS-0007	21.88505611	151.41315067	4(a)(ii): 60 M from FOS	60.0000000
MTS-ECS-0008	22.27346798	150.42037113	4(a)(ii): 60 M from FOS	0.0000006
MTS-ECS-0009	22.27346798	150.42037112	4(a)(ii): 60 M from FOS	21.9076523
MTS-ECS-0010	22.30923393	150.02852966	4(a)(ii): 60 M from FOS	0.0369327
MTS-ECS-0011	22.30929359	150.02786893	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0012	22.30985195	150.02187599	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0013	22.31044122	150.01588646	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0014	22.31106139	150.00990050	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0015	22.31171242	150.00391830	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0016	22.31239431	149.99794004	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0017	22.31310703	149.99196591	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0018	22.31385057	149.98599609	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0019	22.31462488	149.98003075	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0020	22.31542996	149.97407009	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0021	22.31626578	149.96811429	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0022	22.31713232	149.96216352	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0023	22.31802954	149.95621796	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0024	22.31895742	149.95027781	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0025	22.31991593	149.94434324	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0026	22.32090504	149.93841443	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0027	22.32192472	149.93249157	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0028	22.32297494	149.92657483	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0029	22.32405568	149.92066439	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0030	22.32516688	149.91476044	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0031	22.32630853	149.90886316	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0032	22.32748059	149.90297272	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0033	22.32868301	149.89708931	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0034	22.32991577	149.89121311	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0035	22.33117883	149.88534429	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0036	22.33247214	149.87948304	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0037	22.33379567	149.87362953	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0038	22.33514938	149.86778394	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0039	22.33653323	149.86194646	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0040	22.33794717	149.85611725	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0041	22.33939116	149.85029651	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0042	22.34086516	149.84448440	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0043	22.34236911	149.83868111	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0044	22.34390299	149.83288681	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0045	22.34546673	149.82710168	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0046	22.34706030	149.82132590	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0047	22.34868363	149.81555964	4(a)(ii): 60 M from FOS	0.3350862

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0048	22.35033669	149.80980307	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0049	22.35201942	149.80405639	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0050	22.35373177	149.79831976	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0051	22.35547369	149.79259335	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0052	22.35724513	149.78687734	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0053	22.35904603	149.78117192	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0054	22.36087633	149.77547724	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0055	22.36273598	149.76979350	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0056	22.36462492	149.76412085	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0057	22.36654310	149.75845948	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0058	22.36849046	149.75280955	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0059	22.37046694	149.74717125	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0060	22.37247247	149.74154474	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0061	22.37450699	149.73593020	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0062	22.37657045	149.73032780	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0063	22.37866278	149.72473770	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0064	22.38078392	149.71916009	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0065	22.38293379	149.71359513	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0066	22.38511234	149.70804300	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0067	22.38731950	149.70250385	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0068	22.38955521	149.69697787	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0069	22.39181938	149.69146523	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0070	22.39411196	149.68596609	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0071	22.39643287	149.68048061	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0072	22.39878204	149.67500898	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0073	22.40115941	149.66955135	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0074	22.40356489	149.66410790	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0075	22.40599842	149.65867880	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0076	22.40845991	149.65326420	4(a)(ii): 60 M from FOS	0.3350863
MTS-ECS-0077	22.41094931	149.64786427	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0078	22.41346651	149.64247919	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0079	22.41601146	149.63710911	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0080	22.41858408	149.63175421	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0081	22.42118428	149.62641464	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0082	22.42381198	149.62109057	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0083	22.42646711	149.61578217	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0084	22.42914958	149.61048959	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0085	22.43185931	149.60521301	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0086	22.43459622	149.59995258	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0087	22.43736022	149.59470846	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0088	22.44015124	149.58948082	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0089	22.44296918	149.58426981	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0090	22.44581395	149.57907560	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0091	22.44868548	149.57389835	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0092	22.45158367	149.56873822	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0093	22.45450844	149.56359536	4(a)(ii): 60 M from FOS	0.2060777
MTS-ECS-0094	22.45632032	149.56044115	4(a)(ii): 60 M from FOS	5.4313952
MTS-ECS-0095	22.50418729	149.47736912	4(a)(ii): 60 M from FOS	0.1602983
MTS-ECS-0096	22.50560238	149.47491855	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0097	22.50857996	149.46980892	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0098	22.51158385	149.46471705	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0099	22.51461394	149.45964309	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0100	22.51767016	149.45458720	4(a)(ii): 60 M from FOS	0.3350853

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0101	22.52075239	149.44954954	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0102	22.52386056	149.44453025	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0103	22.52699456	149.43952951	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0104	22.53015430	149.43454745	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0105	22.53333968	149.42958423	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0106	22.53655061	149.42464001	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0107	22.53978698	149.41971494	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0108	22.54304870	149.41480917	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0109	22.54633566	149.40992285	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0110	22.54964777	149.40505614	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0111	22.55298492	149.40020918	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0112	22.55634702	149.39538213	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0113	22.55973395	149.39057513	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0114	22.56314562	149.38578834	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0115	22.56658192	149.38102189	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0116	22.57004274	149.37627595	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0117	22.57352798	149.37155065	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0118	22.57703753	149.36684614	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0119	22.58057129	149.36216257	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0120	22.58412915	149.35750008	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0121	22.58771099	149.35285882	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0122	22.59131670	149.34823893	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0123	22.59494619	149.34364055	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0124	22.59859932	149.33906383	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0125	22.60227600	149.33450891	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0126	22.60597611	149.32997594	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0127	22.60969954	149.32546504	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0128	22.61344617	149.32097637	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0129	22.61721588	149.31651005	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0130	22.62100857	149.31206624	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0131	22.62482411	149.30764506	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0132	22.62866239	149.30324666	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0133	22.63252329	149.29887118	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0134	22.63640669	149.29451874	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0135	22.64031247	149.29018949	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0136	22.64424051	149.28588355	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0137	22.64819070	149.28160107	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0138	22.65216290	149.27734217	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0139	22.65615701	149.27310700	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0140	22.66017288	149.26889567	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0141	22.66421042	149.26470833	4(a)(ii): 60 M from FOS	0.3350851
MTS-ECS-0142	22.66826947	149.26054511	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0143	22.67234993	149.25640612	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0144	22.67645167	149.25229151	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0145	22.68057456	149.24820140	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0146	22.68471848	149.24413592	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0147	22.68888329	149.24009520	4(a)(ii): 60 M from FOS	0.3350864
MTS-ECS-0148	22.69306888	149.23607935	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0149	22.69727510	149.23208852	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0150	22.70150183	149.22812282	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0151	22.70574895	149.22418238	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0152	22.71001632	149.22026731	4(a)(ii): 60 M from FOS	0.3350851
MTS-ECS-0153	22.71430380	149.21637776	4(a)(ii): 60 M from FOS	0.3350862

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0154	22.71861128	149.21251382	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0155	22.72293861	149.20867564	4(a)(ii): 60 M from FOS	0.0014815
MTS-ECS-0156	22.72295778	149.20865872	4(a)(ii): 60 M from FOS	48.4120673
MTS-ECS-0157	23.34860780	148.65347162	4(a)(ii): 60 M from FOS	0.2153866
MTS-ECS-0158	23.35139098	148.65099550	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0159	23.35573706	148.64716463	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0160	23.36010274	148.64335985	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0161	23.36448787	148.63958129	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0162	23.36889231	148.63582907	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0163	23.37331594	148.63210330	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0164	23.37775862	148.62840410	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0165	23.38222021	148.62473158	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0166	23.38670058	148.62108587	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0167	23.39119958	148.61746707	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0168	23.39571707	148.61387530	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0169	23.40025293	148.61031068	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0170	23.40480700	148.60677331	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0171	23.40937915	148.60326331	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0172	23.41396924	148.59978079	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0173	23.41857712	148.59632585	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0174	23.42320266	148.59289862	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0175	23.42784572	148.58949919	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0176	23.43250614	148.58612767	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0177	23.43718378	148.58278418	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0178	23.44187851	148.57946881	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0179	23.44659017	148.57618167	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0180	23.45131863	148.57292287	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0181	23.45606373	148.56969250	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0182	23.46082533	148.56649068	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0183	23.46560329	148.56331750	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0184	23.47039744	148.56017306	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0185	23.47520766	148.55705747	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0186	23.48003379	148.55397082	4(a)(ii): 60 M from FOS	0.3350852
MTS-ECS-0187	23.48487567	148.55091322	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0188	23.48973317	148.54788475	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0189	23.49460613	148.54488551	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0190	23.49949440	148.54191561	4(a)(ii): 60 M from FOS	0.3350863
MTS-ECS-0191	23.50439784	148.53897513	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0192	23.50931628	148.53606417	4(a)(ii): 60 M from FOS	0.2884367
MTS-ECS-0193	23.51356190	148.53358217	4(a)(ii): 60 M from FOS	16.4055220
MTS-ECS-0194	23.75529125	148.39279241	4(a)(ii): 60 M from FOS	0.0977313
MTS-ECS-0195	23.75673152	148.39195344	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0196	23.76167916	148.38909613	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0197	23.76664136	148.38626866	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0198	23.77161796	148.38347113	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0199	23.77660881	148.38070362	4(a)(ii): 60 M from FOS	0.3350852
MTS-ECS-0200	23.78161374	148.37796624	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0201	23.78663262	148.37525905	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0202	23.79166528	148.37258216	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0203	23.79671157	148.36993565	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0204	23.80177133	148.36731959	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0205	23.80684440	148.36473409	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0206	23.81193063	148.36217921	4(a)(ii): 60 M from FOS	0.3350859

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0207	23.81702987	148.35965505	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0208	23.82214195	148.35716168	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0209	23.82726672	148.35469919	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0210	23.83240402	148.35226765	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0211	23.83755368	148.34986714	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0212	23.84271556	148.34749775	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0213	23.84788948	148.34515954	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0214	23.85307530	148.34285260	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0215	23.85827285	148.34057699	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0216	23.86348197	148.33833280	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0217	23.86870249	148.33612009	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0218	23.87393427	148.33393895	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0219	23.87917712	148.33178943	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0220	23.88443091	148.32967161	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0221	23.88969545	148.32758556	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0222	23.89497059	148.32553135	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0223	23.90025616	148.32350904	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0224	23.90555201	148.32151870	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0225	23.91085796	148.31956040	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0226	23.91617386	148.31763420	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0227	23.92149953	148.31574017	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0228	23.92683482	148.31387836	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0229	23.93217955	148.31204884	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0230	23.93753357	148.31025167	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0231	23.94289671	148.30848691	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0232	23.94826879	148.30675462	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0233	23.95364966	148.30505485	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0234	23.95903915	148.30338767	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0235	23.96443708	148.30175312	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0236	23.96984330	148.30015127	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0237	23.97525764	148.29858216	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0238	23.98067992	148.29704585	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0239	23.98610998	148.29554239	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0240	23.99154766	148.29407183	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0241	23.99699277	148.29263423	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0242	24.00244516	148.29122962	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0243	24.00790466	148.28985806	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0244	24.01337109	148.28851960	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0245	24.01884428	148.28721427	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0246	24.02432407	148.28594213	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0247	24.02981029	148.28470322	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0248	24.03530276	148.28349758	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0249	24.04080131	148.28232525	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0250	24.04630578	148.28118628	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0251	24.05181600	148.28008069	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0252	24.05733178	148.27900854	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0253	24.06285297	148.27796986	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0254	24.06837938	148.27696468	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0255	24.07391085	148.27599305	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0256	24.07944721	148.27505499	4(a)(ii): 60 M from FOS	0.0405193
MTS-ECS-0257	24.08011700	148.27494383	4(a)(ii): 60 M from FOS	14.1788599
MTS-ECS-0258	24.31449893	148.23605995	4(a)(ii): 60 M from FOS	0.3067637
MTS-ECS-0259	24.31957162	148.23523127	4(a)(ii): 60 M from FOS	0.3350861

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0260	24.32511700	148.23435835	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0261	24.33066674	148.23351916	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0262	24.33622069	148.23271374	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0263	24.34177866	148.23194211	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0264	24.34734049	148.23120431	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0265	24.35290599	148.23050035	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0266	24.35847501	148.22983027	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0267	24.36404735	148.22919409	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0268	24.36962286	148.22859183	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0269	24.37520136	148.22802352	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0270	24.38078267	148.22748918	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0271	24.38636662	148.22698883	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0272	24.39195303	148.22652250	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0273	24.39754174	148.22609019	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0274	24.40313257	148.22569193	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0275	24.40872534	148.22532774	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0276	24.41431988	148.22499762	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0277	24.41991602	148.22470161	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0278	24.42551358	148.22443970	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0279	24.43111238	148.22421191	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0280	24.43671226	148.22401826	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0281	24.44231304	148.22385876	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0282	24.44791454	148.22373340	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0283	24.45351659	148.22364221	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0284	24.45911902	148.22358519	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0285	24.46472165	148.22356234	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0286	24.47032430	148.22357367	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0287	24.47592680	148.22361919	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0288	24.48152898	148.22369890	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0289	24.48713065	148.22381280	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0290	24.49273166	148.22396089	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0291	24.49833182	148.22414317	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0292	24.50393095	148.22435964	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0293	24.50952888	148.22461030	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0294	24.51512545	148.22489515	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0295	24.52072046	148.22521417	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0296	24.52631375	148.22556737	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0297	24.53190515	148.22595474	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0298	24.53749448	148.22637627	4(a)(ii): 60 M from FOS	0.3350852
MTS-ECS-0299	24.54308155	148.22683195	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0300	24.54866621	148.22732177	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0301	24.55424828	148.22784573	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0302	24.55982757	148.22840380	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0303	24.56540392	148.22899599	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0304	24.57097715	148.22962226	4(a)(ii): 60 M from FOS	0.3350864
MTS-ECS-0305	24.57654710	148.23028262	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0306	24.58211357	148.23097703	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0307	24.58767640	148.23170549	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0308	24.59323542	148.23246798	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0309	24.59879045	148.23326448	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0310	24.60434132	148.23409496	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0311	24.60988786	148.23495940	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0312	24.61542988	148.23585779	4(a)(ii): 60 M from FOS	0.3350856

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0313	24.62096722	148.23679010	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0314	24.62649971	148.23775630	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0315	24.63202717	148.23875638	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0316	24.63754942	148.23979029	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0317	24.64306630	148.24085802	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0318	24.64857764	148.24195953	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0319	24.65408325	148.24309480	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0320	24.65958297	148.24426379	4(a)(ii): 60 M from FOS	0.2951237
MTS-ECS-0321	24.66442178	148.24532127	4(a)(ii): 60 M from FOS	28.2113531
MTS-ECS-0322	25.12669223	148.34804018	4(a)(ii): 60 M from FOS	0.3174598
MTS-ECS-0323	25.13189070	148.34921575	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0324	25.13737157	148.35048944	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0325	25.14284586	148.35179686	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0326	25.14831340	148.35313795	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0327	25.15377402	148.35451269	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0328	25.15922755	148.35592103	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0329	25.16467382	148.35736294	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0330	25.17011266	148.35883837	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0331	25.17554390	148.36034728	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0332	25.18096736	148.36188964	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0333	25.18638289	148.36346539	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0334	25.19179030	148.36507449	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0335	25.19718943	148.36671690	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0336	25.20258010	148.36839256	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0337	25.20796216	148.37010144	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0338	25.21333542	148.37184347	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0339	25.21869973	148.37361862	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0340	25.22405491	148.37542682	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0341	25.22940080	148.37726803	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0342	25.23473722	148.37914219	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0343	25.24006401	148.38104925	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0344	25.24538100	148.38298916	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0345	25.25068803	148.38496185	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0346	25.25598492	148.38696726	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0347	25.26127152	148.38900535	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0348	25.26654765	148.39107605	4(a)(ii): 60 M from FOS	0.3350863
MTS-ECS-0349	25.27181316	148.39317930	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0350	25.27706786	148.39531503	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0351	25.28231161	148.39748319	4(a)(ii): 60 M from FOS	0.3350852
MTS-ECS-0352	25.28754422	148.39968370	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0353	25.29276555	148.40191652	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0354	25.29797542	148.40418156	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0355	25.30317368	148.40647876	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0356	25.30836015	148.40880806	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0357	25.31353467	148.41116938	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0358	25.31869709	148.41356266	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0359	25.32384723	148.41598782	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0360	25.32898495	148.41844479	4(a)(ii): 60 M from FOS	0.3350852
MTS-ECS-0361	25.33411006	148.42093349	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0362	25.33922242	148.42345386	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0363	25.34432186	148.42600582	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0364	25.34940823	148.42858929	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0365	25.35448135	148.43120420	4(a)(ii): 60 M from FOS	0.3350859

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0366	25.35954108	148.43385046	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0367	25.36458725	148.43652799	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0368	25.36961970	148.43923672	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0369	25.37463828	148.44197657	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0370	25.37964282	148.44474745	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0371	25.38463317	148.44754927	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0372	25.38960918	148.45038196	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0373	25.39457068	148.45324543	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0374	25.39951751	148.45613959	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0375	25.40444953	148.45906435	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0376	25.40936657	148.46201963	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0377	25.41426849	148.46500534	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0378	25.41915512	148.46802138	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0379	25.42402631	148.47106766	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0380	25.42888191	148.47414410	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0381	25.43372177	148.47725059	4(a)(ii): 60 M from FOS	0.0689409
MTS-ECS-0382	25.43471556	148.47789344	4(a)(ii): 60 M from FOS	6.9685638
MTS-ECS-0383	25.53512022	148.54298867	4(a)(ii): 60 M from FOS	0.2295538
MTS-ECS-0384	25.53842321	148.54514223	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0385	25.54323115	148.54831101	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0386	25.54802288	148.55150958	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0387	25.55279826	148.55473786	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0388	25.55755714	148.55799574	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0389	25.56229937	148.56128312	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0390	25.56702479	148.56459990	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0391	25.57173326	148.56794599	4(a)(ii): 60 M from FOS	0.3350852
MTS-ECS-0392	25.57642462	148.57132127	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0393	25.58109874	148.57472565	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0394	25.58575546	148.57815903	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0395	25.59039464	148.58162128	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0396	25.59501612	148.58511232	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0397	25.59961977	148.58863204	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0398	25.60420543	148.59218031	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0399	25.60877296	148.59575705	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0400	25.61332223	148.59936213	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0401	25.61785307	148.60299545	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0402	25.62236536	148.60665689	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0403	25.62685894	148.61034634	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0404	25.63133368	148.61406369	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0405	25.63578943	148.61780882	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0406	25.64022605	148.62158162	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0407	25.64464341	148.62538197	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0408	25.64904135	148.62920976	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0409	25.65341975	148.63306486	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0410	25.65777847	148.63694716	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0411	25.66211736	148.64085654	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0412	25.66643628	148.64479287	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0413	25.67073511	148.64875604	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0414	25.67501371	148.65274592	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0415	25.67927194	148.65676238	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0416	25.68350966	148.66080531	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0417	25.68772674	148.66487458	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0418	25.69192305	148.66897006	4(a)(ii): 60 M from FOS	0.3350858

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0419	25.69609845	148.67309163	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0420	25.70025281	148.67723915	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0421	25.70438601	148.68141250	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0422	25.70849790	148.68561155	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0423	25.71258836	148.68983617	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0424	25.71665726	148.69408623	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0425	25.72070447	148.69836159	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0426	25.72472986	148.70266212	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0427	25.72873330	148.70698769	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0428	25.73271468	148.71133816	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0429	25.73667385	148.71571340	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0430	25.74061069	148.72011328	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0431	25.74452509	148.72453764	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0432	25.74841691	148.72898636	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0433	25.75228603	148.73345930	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0434	25.75613233	148.73795632	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0435	25.75995569	148.74247727	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0436	25.76375598	148.74702202	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0437	25.76753309	148.75159042	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0438	25.77128689	148.75618234	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0439	25.77501727	148.76079762	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0440	25.77872410	148.76543612	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0441	25.78240727	148.77009771	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0442	25.78606667	148.77478222	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0443	25.78970217	148.77948952	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0444	25.79331366	148.78421945	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0445	25.79690103	148.78897188	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0446	25.80046416	148.79374664	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0447	25.80400293	148.79854360	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0448	25.80751724	148.80336259	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0449	25.81100698	148.80820348	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0450	25.81447203	148.81306610	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0451	25.81791228	148.81795030	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0452	25.82132763	148.82285594	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0453	25.82471795	148.82778285	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0454	25.82808316	148.83273088	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0455	25.83142314	148.83769988	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0456	25.83473778	148.84268969	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0457	25.83802697	148.84770015	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0458	25.84129063	148.85273110	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0459	25.84452863	148.85778239	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0460	25.84774087	148.86285386	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0461	25.85092726	148.86794535	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0462	25.85408770	148.87305669	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0463	25.85722207	148.87818773	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0464	25.86033029	148.88333830	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0465	25.86341225	148.88850824	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0466	25.86646786	148.89369739	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0467	25.86949702	148.89890559	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0468	25.87249962	148.90413267	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0469	25.87547559	148.90937846	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0470	25.87842481	148.91464280	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0471	25.88134720	148.91992553	4(a)(ii): 60 M from FOS	0.3350855

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0472	25.88424266	148.92522647	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0473	25.88711111	148.93054546	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0474	25.88995245	148.93588233	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0475	25.89276658	148.94123692	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0476	25.89555343	148.94660904	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0477	25.89831290	148.95199854	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0478	25.90104490	148.95740524	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0479	25.90374935	148.96282897	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0480	25.90642615	148.96826956	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0481	25.90907524	148.97372683	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0482	25.91169651	148.97920063	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0483	25.91428989	148.98469076	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0484	25.91685529	148.99019705	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0485	25.91939264	148.99571934	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0486	25.92190184	149.00125745	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0487	25.92438283	149.00681120	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0488	25.92683552	149.01238041	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0489	25.92925983	149.01796491	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0490	25.93165569	149.02356452	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0491	25.93402303	149.02917907	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0492	25.93636175	149.03480837	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0493	25.93867180	149.04045225	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0494	25.94095309	149.04611052	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0495	25.94320555	149.05178302	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0496	25.94542912	149.05746955	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0497	25.94762372	149.06316993	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0498	25.94978927	149.06888400	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0499	25.95192572	149.07461155	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0500	25.95403300	149.08035242	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0501	25.95611103	149.08610642	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0502	25.95815974	149.09187336	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0503	25.96017909	149.09765307	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0504	25.96216899	149.10344536	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0505	25.96412939	149.10925004	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0506	25.96606022	149.11506693	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0507	25.96796143	149.12089585	4(a)(ii): 60 M from FOS	0.3350853
MTS-ECS-0508	25.96983294	149.12673660	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0509	25.97167471	149.13258901	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0510	25.97348667	149.13845289	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0511	25.97526877	149.14432805	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0512	25.97702094	149.15021430	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0513	25.97874313	149.15611145	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0514	25.98043530	149.16201933	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0515	25.98209737	149.16793773	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0516	25.98372931	149.17386647	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0517	25.98533105	149.17980537	4(a)(ii): 60 M from FOS	0.0233638
MTS-ECS-0518	25.98544161	149.18021983	4(a)(ii): 60 M from FOS	13.5626033
MTS-ECS-0519	26.04937655	149.42095724	4(a)(ii): 60 M from FOS	0.1989073
MTS-ECS-0520	26.05030575	149.42449157	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0521	26.05184698	149.43045339	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0522	26.05335786	149.43642480	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0523	26.05483835	149.44240561	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0524	26.05628841	149.44839563	4(a)(ii): 60 M from FOS	0.3350861

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MTS-ECS-0525	26.05770798	149.45439467	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0526	26.05909702	149.46040253	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0527	26.06045548	149.46641902	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0528	26.06178332	149.47244395	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0529	26.06308051	149.47847714	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0530	26.06434699	149.48451838	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0531	26.06558273	149.49056748	4(a)(ii): 60 M from FOS	0.3350856
MTS-ECS-0532	26.06678769	149.49662425	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0533	26.06796182	149.50268851	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0534	26.06910510	149.50876004	4(a)(ii): 60 M from FOS	0.3350861
MTS-ECS-0535	26.07021749	149.51483867	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0536	26.07129894	149.52092419	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0537	26.07234943	149.52701641	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0538	26.07336892	149.53311514	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0539	26.07435738	149.53922018	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0540	26.07531477	149.54533134	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0541	26.07624107	149.55144842	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0542	26.07713625	149.55757122	4(a)(ii): 60 M from FOS	0.3350860
MTS-ECS-0543	26.07800028	149.56369956	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0544	26.07883313	149.56983323	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0545	26.07963477	149.57597204	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0546	26.08040519	149.58211579	4(a)(ii): 60 M from FOS	0.2574978
MTS-ECS-0547	26.08097598	149.58684021	4(a)(ii): 60 M from FOS	26.1492026
MTS-ECS-0548	26.13720028	150.06698063	4(a)(ii): 60 M from FOS	0.1936807
MTS-ECS-0549	26.13760562	150.07053934	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0550	26.13828220	150.07669966	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0551	26.13892746	150.08286414	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0552	26.13954137	150.08903258	4(a)(ii): 60 M from FOS	0.3350855
MTS-ECS-0553	26.14012392	150.09520478	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0554	26.14067509	150.10138055	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0555	26.14119485	150.10755969	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0556	26.14168320	150.11374201	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0557	26.14214011	150.11992729	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0558	26.14256558	150.12611535	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0559	26.14295958	150.13230599	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0560	26.14332211	150.13849901	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0561	26.14365316	150.14469422	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0562	26.14395270	150.15089140	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0563	26.14422075	150.15709037	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0564	26.14445728	150.16329093	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0565	26.14466228	150.16949288	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0566	26.14483576	150.17569602	4(a)(ii): 60 M from FOS	0.3350862
MTS-ECS-0567	26.14497771	150.18190016	4(a)(ii): 60 M from FOS	0.3350854
MTS-ECS-0568	26.14508811	150.18810508	4(a)(ii): 60 M from FOS	0.3350857
MTS-ECS-0569	26.14516698	150.19431060	4(a)(ii): 60 M from FOS	0.3350858
MTS-ECS-0570	26.14521430	150.20051652	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0571	26.14523007	150.20672264	4(a)(ii): 60 M from FOS	0.3350859
MTS-ECS-0572	26.14521430	150.21292876	4(a)(ii): 60 M from FOS	0.0041813
MTS-ECS-0573	26.14521390	150.21300620	4(a)(ii): 60 M from FOS	44.5836931
MTS-ECS-0574	26.28889896	151.02374993	1: 200 M from TSB	N/A

The Mogi Seamount region

Table 4. List of the coordinates of fixed points defining the outer limits of the extended continental shelf in the Mogi Seamount region

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
MGS-ECS-0001	32.74082528	143.79940518	1: 200 M from TSB; 4(a)(ii): 60 M from FOS	0.1696825
MGS-ECS-0002	32.73799190	143.79945201	4(a)(ii): 60 M from FOS	0.3350853
MGS-ECS-0003	32.73239632	143.79951662	4(a)(ii): 60 M from FOS	0.3350864
MGS-ECS-0004	32.72680050	143.79954426	4(a)(ii): 60 M from FOS	0.3350853
MGS-ECS-0005	32.72120465	143.79953493	4(a)(ii): 60 M from FOS	0.3350862
MGS-ECS-0006	32.71560891	143.79948864	4(a)(ii): 60 M from FOS	0.3350857
MGS-ECS-0007	32.71001348	143.79940539	4(a)(ii): 60 M from FOS	0.3350854
MGS-ECS-0008	32.70441853	143.79928520	4(a)(ii): 60 M from FOS	0.3350860
MGS-ECS-0009	32.69882422	143.79912807	4(a)(ii): 60 M from FOS	0.3350856
MGS-ECS-0010	32.69323074	143.79893402	4(a)(ii): 60 M from FOS	0.3350861
MGS-ECS-0011	32.68763825	143.79870307	4(a)(ii): 60 M from FOS	0.3350856
MGS-ECS-0012	32.68204694	143.79843521	4(a)(ii): 60 M from FOS	0.3350860
MGS-ECS-0013	32.67645697	143.79813048	4(a)(ii): 60 M from FOS	0.3350854
MGS-ECS-0014	32.67086853	143.79778889	4(a)(ii): 60 M from FOS	0.3350863
MGS-ECS-0015	32.66528177	143.79741044	4(a)(ii): 60 M from FOS	0.3350856
MGS-ECS-0016	32.65969689	143.79699518	4(a)(ii): 60 M from FOS	0.3350857
MGS-ECS-0017	32.65411405	143.79654310	4(a)(ii): 60 M from FOS	0.3350861
MGS-ECS-0018	32.64853342	143.79605424	4(a)(ii): 60 M from FOS	0.3350854
MGS-ECS-0019	32.64295519	143.79552861	4(a)(ii): 60 M from FOS	0.3350856
MGS-ECS-0020	32.63737952	143.79496624	4(a)(ii): 60 M from FOS	0.3350859
MGS-ECS-0021	32.63180658	143.79436716	4(a)(ii): 60 M from FOS	0.3350860
MGS-ECS-0022	32.62623655	143.79373138	4(a)(ii): 60 M from FOS	0.3350855
MGS-ECS-0023	32.62066961	143.79305894	4(a)(ii): 60 M from FOS	0.3350859
MGS-ECS-0024	32.61510592	143.79234986	4(a)(ii): 60 M from FOS	0.3350858
MGS-ECS-0025	32.60954566	143.79160417	4(a)(ii): 60 M from FOS	0.3350859
MGS-ECS-0026	32.60398900	143.79082190	4(a)(ii): 60 M from FOS	0.3350860
MGS-ECS-0027	32.59843611	143.79000309	4(a)(ii): 60 M from FOS	0.3350859
MGS-ECS-0028	32.59288717	143.78914776	4(a)(ii): 60 M from FOS	0.3350858
MGS-ECS-0029	32.58734235	143.78825595	4(a)(ii): 60 M from FOS	0.3350852
MGS-ECS-0030	32.58180183	143.78732769	4(a)(ii): 60 M from FOS	0.3350860
MGS-ECS-0031	32.57626576	143.78636302	4(a)(ii): 60 M from FOS	0.3350857
MGS-ECS-0032	32.57073433	143.78536197	4(a)(ii): 60 M from FOS	0.3350860
MGS-ECS-0033	32.56520770	143.78432459	4(a)(ii): 60 M from FOS	0.3350860
MGS-ECS-0034	32.55968605	143.78325090	4(a)(ii): 60 M from FOS	0.3350858
MGS-ECS-0035	32.55416955	143.78214096	4(a)(ii): 60 M from FOS	0.3350858
MGS-ECS-0036	32.54865837	143.78099480	4(a)(ii): 60 M from FOS	0.3350853
MGS-ECS-0037	32.54315269	143.77981247	4(a)(ii): 60 M from FOS	0.3350860
MGS-ECS-0038	32.53765266	143.77859400	4(a)(ii): 60 M from FOS	0.3350856
MGS-ECS-0039	32.53215847	143.77733944	4(a)(ii): 60 M from FOS	0.3350862
MGS-ECS-0040	32.52667027	143.77604884	4(a)(ii): 60 M from FOS	0.0512252
MGS-ECS-0041	32.52583182	143.77584837	4(a)(ii): 60 M from FOS; 1: 200 M from TSB	N/A

The Ogasawara Plateau region

Table 5. Lists of the coordinates of fixed points defining the outer limits of the extended continental shelf in the Ogasawara Plateau region

(a) Northern limit

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
OGP-ECS-0001	28.36710952	145.85909099	1: 200 M from TSB; 4(a)(ii): 60 M from FOS	0.1461939
OGP-ECS-0002	28.36525760	145.86089239	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0003	28.36099818	145.86500179	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0004	28.35671839	145.86908391	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0005	28.35241839	145.87313863	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0006	28.34809829	145.87716581	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0007	28.34375826	145.88116533	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0008	28.33939841	145.88513707	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0009	28.33501889	145.88908091	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0010	28.33061984	145.89299673	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0011	28.32620139	145.89688439	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0012	28.32176369	145.90074379	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0013	28.31730688	145.90457481	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0014	28.31283110	145.90837732	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0015	28.30833649	145.91215121	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0016	28.30382319	145.91589637	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0017	28.29929135	145.91961268	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0018	28.29474111	145.92330002	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0019	28.29017262	145.92695828	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0020	28.28558601	145.93058736	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0021	28.28098144	145.93418713	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0022	28.27635905	145.93775749	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0023	28.27171899	145.94129833	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0024	28.26706140	145.94480954	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0025	28.26238643	145.94829102	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0026	28.25769423	145.95174265	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0027	28.25298495	145.95516433	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0028	28.24825874	145.95855596	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0029	28.24351574	145.96191744	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0030	28.23875611	145.96524866	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0031	28.23398000	145.96854952	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0032	28.22918755	145.97181991	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0033	28.22437893	145.97505975	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0034	28.21955428	145.97826894	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0035	28.21471375	145.98144737	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0036	28.20985750	145.98459494	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0037	28.20498568	145.98771157	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0038	28.20009845	145.99079716	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0039	28.19519596	145.99385162	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0040	28.19027836	145.99687485	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0041	28.18534581	145.99986677	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0042	28.18039847	146.00282727	4(a)(ii): 60 M from FOS	0.3350863
OGP-ECS-0043	28.17543648	146.00575628	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0044	28.17046002	146.00865371	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0045	28.16546924	146.01151946	4(a)(ii): 60 M from FOS	0.3350858

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
OGP-ECS-0046	28.16046429	146.01435346	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0047	28.15544533	146.01715561	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0048	28.15041252	146.01992584	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0049	28.14536602	146.02266405	4(a)(ii): 60 M from FOS	0.3350863
OGP-ECS-0050	28.14030598	146.02537018	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0051	28.13523258	146.02804413	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0052	28.13014596	146.03068583	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0053	28.12504629	146.03329520	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0054	28.11993373	146.03587216	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0055	28.11480845	146.03841664	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0056	28.10967059	146.04092856	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0057	28.10452033	146.04340784	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0058	28.09935782	146.04585441	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0059	28.09418323	146.04826820	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0060	28.08899673	146.05064914	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0061	28.08379847	146.05299716	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0062	28.07858862	146.05531218	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0063	28.07336735	146.05759415	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0064	28.06813481	146.05984298	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0065	28.06289117	146.06205863	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0066	28.05763660	146.06424102	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0067	28.05237127	146.06639008	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0068	28.04709533	146.06850577	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0069	28.04180896	146.07058800	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0070	28.03651233	146.07263673	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0071	28.03120559	146.07465189	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0072	28.02588891	146.07663343	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0073	28.02056247	146.07858129	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0074	28.01522642	146.08049541	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0075	28.00988095	146.08237574	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0076	28.00452620	146.08422221	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0077	27.99916237	146.08603479	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0078	27.99378960	146.08781342	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0079	27.98840808	146.08955804	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0080	27.98301797	146.09126861	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0081	27.97761943	146.09294508	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0082	27.97221265	146.09458740	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0083	27.96679778	146.09619553	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0084	27.96137501	146.09776941	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0085	27.95594449	146.09930901	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0086	27.95050640	146.10081428	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0087	27.94506092	146.10228519	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0088	27.93960820	146.10372168	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0089	27.93414843	146.10512372	4(a)(ii): 60 M from FOS	0.0703299
OGP-ECS-0090	27.93300162	146.10541361	4(a)(ii): 60 M from FOS	59.9999998
OGP-ECS-0091	27.29964122	146.97819529	4(a)(ii): 60 M from FOS	44.1133894
OGP-ECS-0092	27.48635725	147.77727435	4(a)(ii): 60 M from FOS	0.2920443
OGP-ECS-0093	27.48756654	147.78257675	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0094	27.48892544	147.78866880	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0095	27.49025371	147.79476941	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0096	27.49155132	147.80087839	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0097	27.49281821	147.80699554	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0098	27.49405435	147.81312067	4(a)(ii): 60 M from FOS	0.3350860

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
OGP-ECS-0099	27.49525970	147.81925358	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0100	27.49643422	147.82539406	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0101	27.49757787	147.83154194	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0102	27.49869062	147.83769701	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0103	27.49977243	147.84385907	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0104	27.50082326	147.85002792	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0105	27.50184308	147.85620338	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0106	27.50283187	147.86238523	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0107	27.50378958	147.86857329	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0108	27.50471619	147.87476736	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0109	27.50561167	147.88096723	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0110	27.50647598	147.88717272	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0111	27.50730911	147.89338361	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0112	27.50811102	147.89959972	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0113	27.50888168	147.90582084	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0114	27.50962109	147.91204677	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0115	27.51032920	147.91827731	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0116	27.51100600	147.92451228	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0117	27.51165146	147.93075145	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0118	27.51226557	147.93699464	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0119	27.51284831	147.94324165	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0120	27.51339965	147.94949227	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0121	27.51391958	147.95574631	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0122	27.51440809	147.96200356	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0123	27.51486515	147.96826383	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0124	27.51529075	147.97452691	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0125	27.51568489	147.98079261	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0126	27.51604753	147.98706072	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0127	27.51637869	147.99333104	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0128	27.51667833	147.99960337	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0129	27.51694646	148.00587751	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0130	27.51718307	148.01215326	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0131	27.51738814	148.01843042	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0132	27.51756168	148.02470879	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0133	27.51770367	148.03098816	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0134	27.51781411	148.03726834	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0135	27.51789300	148.04354912	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0136	27.51794033	148.04983031	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0137	27.51795611	148.05611169	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0138	27.51794033	148.06239307	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0139	27.51789300	148.06867426	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0140	27.51781411	148.07495504	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0141	27.51770367	148.08123522	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0142	27.51756168	148.08751459	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0143	27.51738814	148.09379296	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0144	27.51718307	148.10007012	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0145	27.51694646	148.10634587	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0146	27.51667833	148.11262001	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0147	27.51637869	148.11889234	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0148	27.51604753	148.12516266	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0149	27.51568489	148.13143077	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0150	27.51529075	148.13769647	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0151	27.51486515	148.14395955	4(a)(ii): 60 M from FOS	0.3350859

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
OGP-ECS-0152	27.51440809	148.15021982	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0153	27.51391958	148.15647707	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0154	27.51339965	148.16273111	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0155	27.51284831	148.16898173	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0156	27.51226557	148.17522874	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0157	27.51165146	148.18147193	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0158	27.51100600	148.18771110	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0159	27.51032920	148.19394607	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0160	27.50962109	148.20017661	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0161	27.50888168	148.20640254	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0162	27.50811102	148.21262366	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0163	27.50730911	148.21883977	4(a)(ii): 60 M from FOS	0.1580013
OGP-ECS-0164	27.50692016	148.22176902	4(a)(ii): 60 M from FOS	2.6954244
OGP-ECS-0165	27.50021184	148.27172672	4(a)(ii): 60 M from FOS	0.1423565
OGP-ECS-0166	27.49985408	148.27436452	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0167	27.49898977	148.28056963	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0168	27.49809429	148.28676914	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0169	27.49716769	148.29296283	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0170	27.49620998	148.29915052	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0171	27.49522119	148.30533201	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0172	27.49420137	148.31150710	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0173	27.49315054	148.31767558	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0174	27.49206873	148.32383728	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0175	27.49095599	148.32999197	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0176	27.48981234	148.33613948	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0177	27.48863782	148.34227961	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0178	27.48743247	148.34841214	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0179	27.48619633	148.35453690	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0180	27.48492944	148.36065369	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0181	27.48363184	148.36676230	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0182	27.48230357	148.37286255	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0183	27.48094467	148.37895424	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0184	27.47955519	148.38503718	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0185	27.47813517	148.39111116	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0186	27.47668465	148.39717600	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0187	27.47520369	148.40323150	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0188	27.47369233	148.40927748	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0189	27.47215061	148.41531372	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0190	27.47057860	148.42134006	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0191	27.46897633	148.42735628	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0192	27.46734386	148.43336220	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0193	27.46568124	148.43935763	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0194	27.46398853	148.44534237	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0195	27.46226577	148.45131624	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0196	27.46051303	148.45727905	4(a)(ii): 60 M from FOS	0.3350852
OGP-ECS-0197	27.45873037	148.46323059	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0198	27.45691782	148.46917069	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0199	27.45507547	148.47509916	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0200	27.45320335	148.48101580	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0201	27.45130154	148.48692043	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0202	27.44937010	148.49281286	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0203	27.44740908	148.49869290	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0204	27.44541855	148.50456036	4(a)(ii): 60 M from FOS	0.3350857

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
OGP-ECS-0205	27.44339858	148.51041506	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0206	27.44134922	148.51625681	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0207	27.43927054	148.52208543	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0208	27.43716262	148.52790072	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0209	27.43502551	148.53370251	4(a)(ii): 60 M from FOS	0.0712092
OGP-ECS-0210	27.43456760	148.53493369	4(a)(ii): 60 M from FOS	8.7019337
OGP-ECS-0211	27.37844966	148.68527375	4(a)(ii): 60 M from FOS	0.1925069
OGP-ECS-0212	27.37720162	148.68859567	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0213	27.37500638	148.69436702	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0214	27.37278216	148.70012431	4(a)(ii): 60 M from FOS	0.3350863
OGP-ECS-0215	27.37052903	148.70586738	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0216	27.36824708	148.71159602	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0217	27.36593636	148.71731007	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0218	27.36359696	148.72300933	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0219	27.36122895	148.72869364	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0220	27.35883240	148.73436280	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0221	27.35640740	148.74001664	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0222	27.35395401	148.74565497	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0223	27.35147232	148.75127763	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0224	27.34896241	148.75688442	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0225	27.34642436	148.76247518	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0226	27.34385824	148.76804972	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0227	27.34126414	148.77360786	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0228	27.33864215	148.77914944	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0229	27.33599234	148.78467428	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0230	27.33331481	148.79018219	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0231	27.33060963	148.79567302	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0232	27.32787689	148.80114657	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0233	27.32511668	148.80660268	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0234	27.32232909	148.81204118	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0235	27.31951421	148.81746189	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0236	27.31667212	148.82286464	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0237	27.31380293	148.82824926	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0238	27.31090671	148.83361559	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0239	27.30798356	148.83896344	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0240	27.30503358	148.84429266	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0241	27.30205686	148.84960307	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0242	27.29905349	148.85489450	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0243	27.29602357	148.86016679	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0244	27.29296719	148.86541977	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0245	27.28988446	148.87065328	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0246	27.28677548	148.87586715	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0247	27.28364033	148.88106122	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0248	27.28047912	148.88623531	4(a)(ii): 60 M from FOS	0.1985501
OGP-ECS-0249	27.27859375	148.88929166	4(a)(ii): 60 M from FOS	59.9999998
OGP-ECS-0250	26.75130096	149.84172277	4(a)(ii): 60 M from FOS	0.3278487
OGP-ECS-0251	26.74865420	149.84706750	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0252	26.74592177	149.85251324	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0253	26.74316186	149.85794162	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0254	26.74037458	149.86335250	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0255	26.73756000	149.86874569	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0256	26.73471822	149.87412102	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0257	26.73184933	149.87947833	4(a)(ii): 60 M from FOS	0.3350856

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
OGP-ECS-0258	26.72895342	149.88481744	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0259	26.72603058	149.89013819	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0260	26.72308091	149.89544041	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0261	26.72010450	149.90072393	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0262	26.71710144	149.90598858	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0263	26.71407183	149.91123419	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0264	26.71101577	149.91646061	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0265	26.70793336	149.92166766	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0266	26.70482468	149.92685519	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0267	26.70168985	149.93202302	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0268	26.69852896	149.93717100	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0269	26.69534211	149.94229896	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0270	26.69212941	149.94740674	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0271	26.68889095	149.95249419	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0272	26.68562684	149.95756113	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0273	26.68233719	149.96260741	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0274	26.67902209	149.96763287	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0275	26.67568166	149.97263736	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0276	26.67231599	149.97762071	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0277	26.66892520	149.98258277	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0278	26.66550940	149.98752338	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0279	26.66206869	149.99244239	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0280	26.65860319	149.99733965	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0281	26.65511300	150.00221499	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0282	26.65159823	150.00706827	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0283	26.64805900	150.01189933	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0284	26.64449542	150.01670802	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0285	26.64090760	150.02149420	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0286	26.63729566	150.02625770	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0287	26.63365971	150.03099839	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0288	26.62999986	150.03571611	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0289	26.62631624	150.04041072	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0290	26.62260896	150.04508206	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0291	26.61887814	150.04972999	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0292	26.61512390	150.05435438	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0293	26.61134635	150.05895506	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0294	26.60754562	150.06353190	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0295	26.60372182	150.06808476	4(a)(ii): 60 M from FOS	0.3350852
OGP-ECS-0296	26.59987509	150.07261348	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0297	26.59600553	150.07711794	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0298	26.59211328	150.08159799	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0299	26.58819846	150.08605349	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0300	26.58426119	150.09048431	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0301	26.58030159	150.09489029	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0302	26.57631980	150.09927131	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0303	26.57231594	150.10362724	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0304	26.56829013	150.10795792	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0305	26.56424251	150.11226324	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0306	26.56017320	150.11654305	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0307	26.55608234	150.12079722	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0308	26.55197004	150.12502562	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0309	26.54783645	150.12922812	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0310	26.54368169	150.13340459	4(a)(ii): 60 M from FOS	0.3350861

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
OGP-ECS-0311	26.53950589	150.13755490	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0312	26.53530920	150.14167892	4(a)(ii): 60 M from FOS	0.2550036
OGP-ECS-0313	26.53210155	150.14479964	4(a)(ii): 60 M from FOS	26.7445764
OGP-ECS-0314	26.19466346	150.47032721	4(a)(ii): 60 M from FOS	0.2546966
OGP-ECS-0315	26.19144034	150.47341059	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0316	26.18718189	150.47744377	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0317	26.18290307	150.48145024	4(a)(ii): 60 M from FOS	0.3350863
OGP-ECS-0318	26.17860401	150.48542988	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0319	26.17428487	150.48938255	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0320	26.16994576	150.49330814	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0321	26.16558683	150.49720652	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0322	26.16120822	150.50107759	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0323	26.15681006	150.50492120	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0324	26.15239250	150.50873726	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0325	26.14795567	150.51252563	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0326	26.14349972	150.51628621	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0327	26.13902478	150.52001887	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0328	26.13453100	150.52372351	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0329	26.13001852	150.52740001	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0330	26.12548749	150.53104825	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0331	26.12093804	150.53466812	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0332	26.11637032	150.53825951	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0333	26.11178448	150.54182232	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0334	26.10718066	150.54535643	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0335	26.10255900	150.54886173	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0336	26.09791966	150.55233812	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0337	26.09326277	150.55578548	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0338	26.08858849	150.55920372	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0339	26.08389696	150.56259273	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0340	26.07918834	150.56595241	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0341	26.07446277	150.56928265	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0342	26.06972039	150.57258335	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0343	26.06496137	150.57585442	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0344	26.06018585	150.57909574	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0345	26.05539398	150.58230723	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0346	26.05058591	150.58548878	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0347	26.04576180	150.58864030	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0348	26.04092179	150.59176169	4(a)(ii): 60 M from FOS	0.3350852
OGP-ECS-0349	26.03606605	150.59485285	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0350	26.03119471	150.59791370	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0351	26.02630795	150.60094415	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0352	26.02140590	150.60394409	4(a)(ii): 60 M from FOS	0.3350851
OGP-ECS-0353	26.01648874	150.60691343	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0354	26.01155660	150.60985210	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0355	26.00660965	150.61276000	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0356	26.00164804	150.61563703	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0357	25.99667194	150.61848312	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0358	25.99168149	150.62129818	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0359	25.98667685	150.62408212	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0360	25.98165818	150.62683487	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0361	25.97662565	150.62955633	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0362	25.97157940	150.63224642	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0363	25.96651961	150.63490507	4(a)(ii): 60 M from FOS	0.3350859

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
OGP-ECS-0364	25.96144642	150.63753220	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0365	25.95635999	150.64012772	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-0366	25.95126050	150.64269156	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0367	25.94614809	150.64522364	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0368	25.94102293	150.64772389	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0369	25.93588518	150.65019223	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-0370	25.93073501	150.65262858	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0371	25.92557257	150.65503289	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0372	25.92039803	150.65740506	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0373	25.91521154	150.65974504	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-0374	25.91001328	150.66205276	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0375	25.90480341	150.66432814	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0376	25.89958209	150.66657112	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0377	25.89434948	150.66878163	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-0378	25.88910576	150.67095961	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0379	25.88385108	150.67310499	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0380	25.87858561	150.67521771	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-0381	25.87330951	150.67729771	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0382	25.86802296	150.67934493	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0383	25.86272611	150.68135930	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0384	25.85741914	150.68334077	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-0385	25.85210221	150.68528928	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0386	25.84677549	150.68720477	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-0387	25.84143915	150.68908720	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-0388	25.83609334	150.69093649	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0389	25.83073825	150.69275260	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0390	25.82537404	150.69453548	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0391	25.82000088	150.69628508	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-0392	25.81461893	150.69800134	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-0393	25.80922837	150.69968421	4(a)(ii): 60 M from FOS	0.1054328
OGP-ECS-0394	25.80753051	150.70020681	4(a)(ii): 60 M from FOS; 1: 200 M from TSB	N/A

(b) Southern limit

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
OGP-ECS-1001	24.56844478	150.32912451	1: 200 M from TSB	50.7525032
OGP-ECS-1002	23.92485199	149.72587868	4(a)(ii): 60 M from FOS	0.0291195
OGP-ECS-1003	23.92448212	149.72553418	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1004	23.92023688	149.72155611	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-1005	23.91601203	149.71755258	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-1006	23.91180768	149.71352370	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1007	23.90762398	149.70946961	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1008	23.90346104	149.70539043	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1009	23.89931900	149.70128629	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1010	23.89519798	149.69715732	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1011	23.89109811	149.69300365	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1012	23.88701951	149.68882540	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1013	23.88296232	149.68462271	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1014	23.87892665	149.68039571	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1015	23.87491263	149.67614453	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1016	23.87092038	149.67186930	4(a)(ii): 60 M from FOS	0.3350855

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
OGP-ECS-1017	23.86695003	149.66757016	4(a)(ii): 60 M from FOS	0.1956912
OGP-ECS-1018	23.86464150	149.66504845	4(a)(ii): 60 M from FOS	16.9142672
OGP-ECS-1019	23.66528288	149.44706382	4(a)(ii): 60 M from FOS	0.2252784
OGP-ECS-1020	23.66263064	149.44415950	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1021	23.65870414	149.43981980	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1022	23.65479989	149.43545663	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1023	23.65091802	149.43107011	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1024	23.64705865	149.42666039	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1025	23.64322189	149.42222760	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1026	23.63940787	149.41777188	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1027	23.63561670	149.41329337	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1028	23.63184850	149.40879220	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1029	23.62810338	149.40426853	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1030	23.62438146	149.39972248	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-1031	23.62068284	149.39515420	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-1032	23.61700766	149.39056384	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1033	23.61335601	149.38595153	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1034	23.60972801	149.38131742	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-1035	23.60612377	149.37666164	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1036	23.60254341	149.37198435	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1037	23.59898702	149.36728570	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1038	23.59545473	149.36256582	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1039	23.59194663	149.35782486	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1040	23.58846284	149.35306297	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-1041	23.58500347	149.34828030	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1042	23.58156861	149.34347699	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-1043	23.57815837	149.33865319	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-1044	23.57477287	149.33380906	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1045	23.57141219	149.32894474	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1046	23.56807646	149.32406038	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1047	23.56476576	149.31915614	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1048	23.56148019	149.31423216	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1049	23.55821987	149.30928860	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1050	23.55498489	149.30432561	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1051	23.55177534	149.29934334	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1052	23.54859133	149.29434195	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-1053	23.54543296	149.28932160	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1054	23.54230032	149.28428242	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1055	23.53919350	149.27922460	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1056	23.53611260	149.27414827	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1057	23.53305772	149.26905359	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-1058	23.53002896	149.26394073	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1059	23.52702639	149.25880983	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-1060	23.52405012	149.25366107	4(a)(ii): 60 M from FOS	0.0730992
OGP-ECS-1061	23.52340434	149.25253551	4(a)(ii): 60 M from FOS	7.7863791
OGP-ECS-1062	23.45463888	149.13265969	4(a)(ii): 60 M from FOS	0.3069217
OGP-ECS-1063	23.45193787	149.12792928	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1064	23.44901437	149.12274799	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1065	23.44611743	149.11754931	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1066	23.44324715	149.11233341	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1067	23.44040362	149.10710044	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1068	23.43758691	149.10185056	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1069	23.43479711	149.09658394	4(a)(ii): 60 M from FOS	0.3350856

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
OGP-ECS-1070	23.43203432	149.09130074	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1071	23.42929861	149.08600112	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1072	23.42659007	149.08068525	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1073	23.42390878	149.07535328	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1074	23.42125483	149.07000538	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1075	23.41862829	149.06464172	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1076	23.41602925	149.05926246	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1077	23.41345778	149.05386777	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1078	23.41091396	149.04845781	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1079	23.40839787	149.04303274	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1080	23.40590960	149.03759274	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1081	23.40344920	149.03213797	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1082	23.40101677	149.02666860	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1083	23.39861237	149.02118480	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1084	23.39623608	149.01568673	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-1085	23.39388796	149.01017456	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1086	23.39156810	149.00464847	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1087	23.38927656	148.99910862	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1088	23.38701342	148.99355518	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1089	23.38477873	148.98798832	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1090	23.38257258	148.98240822	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1091	23.38039502	148.97681504	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1092	23.37824613	148.97120896	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1093	23.37612596	148.96559014	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-1094	23.37403459	148.95995877	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1095	23.37197208	148.95431500	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-1096	23.36993849	148.94865903	4(a)(ii): 60 M from FOS	0.3350863
OGP-ECS-1097	23.36793388	148.94299100	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1098	23.36595832	148.93731111	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1099	23.36401186	148.93161953	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1100	23.36209457	148.92591643	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1101	23.36020650	148.92020198	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1102	23.35834771	148.91447636	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1103	23.35651826	148.90873974	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1104	23.35471820	148.90299230	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1105	23.35294759	148.89723422	4(a)(ii): 60 M from FOS	0.3350852
OGP-ECS-1106	23.35120649	148.89146568	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1107	23.34949493	148.88568684	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1108	23.34781299	148.87989788	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1109	23.34616070	148.87409899	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1110	23.34453813	148.86829034	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1111	23.34294531	148.86247210	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1112	23.34138231	148.85664446	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1113	23.33984915	148.85080759	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-1114	23.33834590	148.84496168	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1115	23.33687260	148.83910689	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1116	23.33542929	148.83324341	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1117	23.33401602	148.82737142	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1118	23.33263283	148.82149110	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1119	23.33127976	148.81560263	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1120	23.32995686	148.80970618	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1121	23.32866416	148.80380194	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1122	23.32740170	148.79789009	4(a)(ii): 60 M from FOS	0.3350860

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
OGP-ECS-1123	23.32616953	148.79197080	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1124	23.32496767	148.78604427	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1125	23.32379618	148.78011066	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1126	23.32265507	148.77417016	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1127	23.32154440	148.76822296	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1128	23.32046418	148.76226923	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1129	23.31941446	148.75630916	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1130	23.31839526	148.75034292	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1131	23.31740662	148.74437070	4(a)(ii): 60 M from FOS	0.3350854
OGP-ECS-1132	23.31644857	148.73839269	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-1133	23.31552114	148.73240905	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1134	23.31462435	148.72641999	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1135	23.31375823	148.72042567	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1136	23.31292281	148.71442629	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1137	23.31211812	148.70842202	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1138	23.31134417	148.70241305	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-1139	23.31060100	148.69639957	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-1140	23.30988862	148.69038174	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1141	23.30920706	148.68435977	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1142	23.30855634	148.67833383	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1143	23.30793647	148.67230410	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1144	23.30734748	148.66627078	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1145	23.30678939	148.66023404	4(a)(ii): 60 M from FOS	0.3350862
OGP-ECS-1146	23.30626220	148.65419406	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1147	23.30576595	148.64815104	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1148	23.30530063	148.64210516	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1149	23.30486628	148.63605660	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1150	23.30446289	148.63000554	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1151	23.30409049	148.62395217	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1152	23.30374908	148.61789668	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1153	23.30343867	148.61183925	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1154	23.30315928	148.60578006	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1155	23.30291091	148.59971930	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1156	23.30269357	148.59365715	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1157	23.30250726	148.58759380	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1158	23.30235200	148.58152943	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1159	23.30222778	148.57546423	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1160	23.30213462	148.56939838	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-1161	23.30207251	148.56333208	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1162	23.30204145	148.55726549	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1163	23.30204145	148.55119881	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1164	23.30207251	148.54513222	4(a)(ii): 60 M from FOS	0.3350853
OGP-ECS-1165	23.30213462	148.53906592	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1166	23.30222778	148.53300007	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1167	23.30235200	148.52693487	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1168	23.30250726	148.52087050	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1169	23.30269357	148.51480715	4(a)(ii): 60 M from FOS	0.0195522
OGP-ECS-1170	23.30270539	148.51445339	4(a)(ii): 60 M from FOS	7.4132685
OGP-ECS-1171	23.30715303	148.38032075	4(a)(ii): 60 M from FOS	0.0370438
OGP-ECS-1172	23.30717516	148.37965048	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1173	23.30739250	148.37358813	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1174	23.30764087	148.36752717	4(a)(ii): 60 M from FOS	0.3350861
OGP-ECS-1175	23.30792026	148.36146777	4(a)(ii): 60 M from FOS	0.3350854

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 **provision invoked**	distance to next point [M]
OGP-ECS-1176	23.30823066	148.35541014	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1177	23.30857207	148.34935444	4(a)(ii): 60 M from FOS	0.3350858
OGP-ECS-1178	23.30894448	148.34330087	4(a)(ii): 60 M from FOS	0.3350857
OGP-ECS-1179	23.30934786	148.33724961	4(a)(ii): 60 M from FOS	0.3350855
OGP-ECS-1180	23.30978222	148.33120085	4(a)(ii): 60 M from FOS	0.3350859
OGP-ECS-1181	23.31024753	148.32515476	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1182	23.31074379	148.31911154	4(a)(ii): 60 M from FOS	0.3350860
OGP-ECS-1183	23.31127097	148.31307136	4(a)(ii): 60 M from FOS	0.3350856
OGP-ECS-1184	23.31182906	148.30703442	4(a)(ii): 60 M from FOS	0.2220225
OGP-ECS-1185	23.31221586	148.30303631	4(a)(ii): 60 M from FOS	6.0628161
OGP-ECS-1186	23.32293165	148.19387205	4(a)(ii): 60 M from FOS	0.1534693
OGP-ECS-1187	23.32320524	148.19110891	4(a)(ii): 60 M from FOS	0.1300135
OGP-ECS-1188	23.32344208	148.18876867	4(a)(ii): 60 M from FOS	55.7513270
OGP-ECS-1189	23.42281227	147.18461445	4(a)(ii): 60 M from FOS	19.2606855
OGP-ECS-1190	23.36323505	146.84181575	1: 200 M from TSB	N/A

The Southern Oki-Daito Ridge region

Table 6. List of the coordinates of fixed points defining the outer limits of the extended continental shelf in the Southern Oki-Daito Ridge region

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0001	21.11617070	131.19678724	1: 200 M from TSB	18.2996720
ODR-ECS-0002	20.81006532	131.19740404	4(a)(ii): 60 M from FOS	0.0916355
ODR-ECS-0003	20.80853247	131.19740588	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0004	20.80292727	131.19739140	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0005	20.79732223	131.19734364	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0006	20.79171752	131.19726260	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0007	20.78611333	131.19714829	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0008	20.78050981	131.19700071	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0009	20.77490716	131.19681987	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0010	20.76930554	131.19660578	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0011	20.76370513	131.19635846	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0012	20.75810610	131.19607791	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0013	20.75250862	131.19576414	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0014	20.74691288	131.19541718	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0015	20.74131904	131.19503702	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0016	20.73572728	131.19462370	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0017	20.73013778	131.19417722	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0018	20.72455070	131.19369761	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0019	20.71896623	131.19318487	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0020	20.71338453	131.19263904	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0021	20.70780578	131.19206013	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0022	20.70223015	131.19144817	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0023	20.69665782	131.19080317	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0024	20.69108896	131.19012516	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0025	20.68552374	131.18941416	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0026	20.67996234	131.18867020	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0027	20.67440492	131.18789331	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0028	20.66885167	131.18708352	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0029	20.66330276	131.18624085	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0030	20.65775835	131.18536533	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0031	20.65221862	131.18445700	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0032	20.64668375	131.18351588	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0033	20.64115389	131.18254201	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0034	20.63562924	131.18153543	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0035	20.63010995	131.18049616	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0036	20.62459620	131.17942424	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0037	20.61908816	131.17831972	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0038	20.61358601	131.17718262	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0039	20.60808990	131.17601298	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0040	20.60260002	131.17481086	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0041	20.59711653	131.17357628	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0042	20.59163961	131.17230929	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0043	20.58616942	131.17100993	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0044	20.58070614	131.16967825	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0045	20.57524993	131.16831429	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0046	20.56980096	131.16691809	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0047	20.56435941	131.16548971	4(a)(ii): 60 M from FOS	0.3350862

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0048	20.55892543	131.16402918	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0049	20.55349921	131.16253657	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0050	20.54808091	131.16101191	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0051	20.54267069	131.15945527	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0052	20.53726873	131.15786668	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0053	20.53187518	131.15624621	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0054	20.52649023	131.15459391	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0055	20.52111403	131.15290983	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0056	20.51574676	131.15119402	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0057	20.51038858	131.14944655	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0058	20.50503965	131.14766747	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0059	20.49970014	131.14585684	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0060	20.49437022	131.14401472	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0061	20.48905006	131.14214117	4(a)(ii): 60 M from FOS	0.3350863
ODR-ECS-0062	20.48373980	131.14023625	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0063	20.47843964	131.13830002	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0064	20.47314971	131.13633255	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0065	20.46787020	131.13433390	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0066	20.46260126	131.13230414	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0067	20.45734306	131.13024332	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0068	20.45209576	131.12815153	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0069	20.44685952	131.12602882	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0070	20.44163450	131.12387526	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0071	20.43642087	131.12169094	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0072	20.43121879	131.11947590	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0073	20.42602841	131.11723024	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0074	20.42084991	131.11495401	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0075	20.41568343	131.11264730	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0076	20.41052915	131.11031017	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0077	20.40538721	131.10794271	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0078	20.40025778	131.10554498	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0079	20.39514102	131.10311708	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0080	20.39003709	131.10065906	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0081	20.38494613	131.09817102	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0082	20.37986832	131.09565304	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0083	20.37480381	131.09310518	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0084	20.36975275	131.09052755	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0085	20.36471530	131.08792021	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0086	20.35969162	131.08528325	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0087	20.35468186	131.08261676	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0088	20.34968617	131.07992082	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0089	20.34470472	131.07719552	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0090	20.33973765	131.07444094	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0091	20.33478512	131.07165718	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0092	20.32984729	131.06884431	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0093	20.32492430	131.06600244	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0094	20.32001630	131.06313165	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0095	20.31512345	131.06023203	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0096	20.31024590	131.05730367	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0097	20.30538380	131.05434667	4(a)(ii): 60 M from FOS	0.3350852
ODR-ECS-0098	20.30053731	131.05136113	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0099	20.29570656	131.04834713	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0100	20.29089171	131.04530477	4(a)(ii): 60 M from FOS	0.3350855

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0101	20.28609291	131.04223416	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0102	20.28131030	131.03913538	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0103	20.27654404	131.03600853	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0104	20.27179427	131.03285372	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0105	20.26706113	131.02967104	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0106	20.26234478	131.02646059	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0107	20.25764536	131.02322248	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0108	20.25296302	131.01995681	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0109	20.24829789	131.01666368	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0110	20.24365012	131.01334319	4(a)(ii): 60 M from FOS	0.3350851
ODR-ECS-0111	20.23901987	131.00999546	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0112	20.23440726	131.00662058	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0113	20.22981244	131.00321866	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0114	20.22523555	130.99978981	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0115	20.22067674	130.99633414	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0116	20.21613615	130.99285176	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0117	20.21161390	130.98934277	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0118	20.20711016	130.98580728	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0119	20.20262504	130.98224542	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0120	20.19815870	130.97865728	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0121	20.19371127	130.97504299	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0122	20.18928288	130.97140265	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0123	20.18487368	130.96773639	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0124	20.18048380	130.96404430	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0125	20.17611337	130.96032652	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0126	20.17176252	130.95658316	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0127	20.16743141	130.95281433	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0128	20.16312014	130.94902016	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0129	20.15882887	130.94520076	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0130	20.15455772	130.94135625	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0131	20.15030682	130.93748675	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0132	20.14607630	130.93359239	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0133	20.14186630	130.92967328	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0134	20.13767695	130.92572955	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0135	20.13350836	130.92176132	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0136	20.12936068	130.91776872	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0137	20.12523403	130.91375187	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0138	20.12112853	130.90971089	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0139	20.11704432	130.90564592	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0140	20.11298151	130.90155707	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0141	20.10894024	130.89744448	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0142	20.10492063	130.89330828	4(a)(ii): 60 M from FOS	0.3350864
ODR-ECS-0143	20.10092279	130.88914858	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0144	20.09694686	130.88496554	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0145	20.09299296	130.88075926	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0146	20.08906121	130.87652990	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0147	20.08515173	130.87227756	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0148	20.08126463	130.86800240	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0149	20.07740005	130.86370454	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0150	20.07355809	130.85938412	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0151	20.06973888	130.85504127	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0152	20.06594254	130.85067612	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0153	20.06216918	130.84628882	4(a)(ii): 60 M from FOS	0.3350860

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0154	20.05841891	130.84187949	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0155	20.05469185	130.83744828	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0156	20.05098813	130.83299532	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0157	20.04730784	130.82852075	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0158	20.04365111	130.82402471	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0159	20.04001804	130.81950735	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0160	20.03640875	130.81496879	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0161	20.03282335	130.81040918	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0162	20.02926195	130.80582867	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0163	20.02572466	130.80122739	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0164	20.02221159	130.79660549	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0165	20.01872284	130.79196311	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0166	20.01525852	130.78730039	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0167	20.01181875	130.78261748	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0168	20.00840362	130.77791453	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0169	20.00501324	130.77319168	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0170	20.00164771	130.76844907	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0171	19.99830714	130.76368686	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0172	19.99499163	130.75890518	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0173	19.99170128	130.75410420	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0174	19.98843620	130.74928405	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0175	19.98519647	130.74444489	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0176	19.98198222	130.73958686	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0177	19.97879352	130.73471012	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0178	19.97563048	130.72981482	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0179	19.97249320	130.72490111	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0180	19.96938177	130.71996914	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0181	19.96629629	130.71501906	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0182	19.96323686	130.71005102	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0183	19.96020356	130.70506518	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0184	19.95719649	130.70006170	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0185	19.95421574	130.69504073	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0186	19.95126141	130.69000241	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0187	19.94833358	130.68494692	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0188	19.94543235	130.67987440	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0189	19.94255780	130.67478501	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0190	19.93971003	130.66967891	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0191	19.93688911	130.66455625	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0192	19.93409514	130.65941720	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0193	19.93132820	130.65426191	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0194	19.92858838	130.64909054	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0195	19.92587576	130.64390324	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0196	19.92319042	130.63870019	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0197	19.92053245	130.63348154	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0198	19.91790192	130.62824745	4(a)(ii): 60 M from FOS	0.3350852
ODR-ECS-0199	19.91529893	130.62299809	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0200	19.91272354	130.61773360	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0201	19.91017585	130.61245416	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0202	19.90765591	130.60715993	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0203	19.90516382	130.60185108	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0204	19.90269965	130.59652775	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0205	19.90026348	130.59119013	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0206	19.89785537	130.58583837	4(a)(ii): 60 M from FOS	0.3350856

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0207	19.89547541	130.58047264	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0208	19.89312366	130.57509310	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0209	19.89080021	130.56969992	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0210	19.88850511	130.56429326	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0211	19.88623845	130.55887329	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0212	19.88400028	130.55344018	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0213	19.88179068	130.54799410	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0214	19.87960972	130.54253520	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0215	19.87745746	130.53706367	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0216	19.87533397	130.53157966	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0217	19.87323932	130.52608335	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0218	19.87117356	130.52057490	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0219	19.86913677	130.51505449	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0220	19.86712900	130.50952228	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0221	19.86515031	130.50397845	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0222	19.86320077	130.49842315	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0223	19.86128044	130.49285658	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0224	19.85938937	130.48727888	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0225	19.85752763	130.48169025	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0226	19.85569526	130.47609084	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0227	19.85389234	130.47048083	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0228	19.85211890	130.46486040	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0229	19.85037501	130.45922971	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0230	19.84866072	130.45358893	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0231	19.84697608	130.44793825	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0232	19.84532114	130.44227783	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0233	19.84369596	130.43660785	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0234	19.84210058	130.43092848	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0235	19.84053505	130.42523990	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0236	19.83899943	130.41954227	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0237	19.83749375	130.41383578	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0238	19.83601807	130.40812060	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0239	19.83457243	130.40239690	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0240	19.83315687	130.39666487	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0241	19.83177143	130.39092467	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0242	19.83041617	130.38517648	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0243	19.82909112	130.37942048	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0244	19.82779631	130.37365685	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0245	19.82653180	130.36788575	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0246	19.82529762	130.36210738	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0247	19.82409381	130.35632189	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0248	19.82292040	130.35052949	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0249	19.82177743	130.34473033	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0250	19.82066494	130.33892460	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0251	19.81958296	130.33311247	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0252	19.81853152	130.32729413	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0253	19.81751065	130.32146975	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0254	19.81652039	130.31563951	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0255	19.81556077	130.30980358	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0256	19.81463181	130.30396216	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0257	19.81373355	130.29811541	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0258	19.81286600	130.29226351	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0259	19.81202921	130.28640665	4(a)(ii): 60 M from FOS	0.3350854

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0260	19.81122319	130.28054501	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0261	19.81044797	130.27467875	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0262	19.80970357	130.26880807	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0263	19.80899002	130.26293314	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0264	19.80830734	130.25705415	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0265	19.80765554	130.25117126	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0266	19.80703465	130.24528467	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0267	19.80644469	130.23939455	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0268	19.80588567	130.23350108	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0269	19.80535761	130.22760445	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0270	19.80486054	130.22170483	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0271	19.80439445	130.21580240	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0272	19.80395938	130.20989735	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0273	19.80355532	130.20398986	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0274	19.80318230	130.19808010	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0275	19.80284033	130.19216826	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0276	19.80252941	130.18625451	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0277	19.80224955	130.18033905	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0278	19.80200077	130.17442204	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0279	19.80178307	130.16850368	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0280	19.80159645	130.16258414	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0281	19.80144093	130.15666360	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0282	19.80131651	130.15074224	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0283	19.80122319	130.14482026	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0284	19.80116098	130.13889781	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0285	19.80112987	130.13297510	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0286	19.80112987	130.12705230	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0287	19.80116098	130.12112959	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0288	19.80122319	130.11520714	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0289	19.80131651	130.10928516	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0290	19.80144093	130.10336380	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0291	19.80159645	130.09744326	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0292	19.80178307	130.09152372	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0293	19.80200077	130.08560536	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0294	19.80224955	130.07968835	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0295	19.80252941	130.07377289	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0296	19.80284033	130.06785914	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0297	19.80318230	130.06194730	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0298	19.80355532	130.05603754	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0299	19.80395938	130.05013005	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0300	19.80439445	130.04422500	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0301	19.80486054	130.03832257	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0302	19.80535761	130.03242295	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0303	19.80588567	130.02652632	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0304	19.80644469	130.02063285	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0305	19.80703465	130.01474273	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0306	19.80765554	130.00885614	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0307	19.80830734	130.00297325	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0308	19.80899002	129.99709426	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0309	19.80970357	129.99121933	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0310	19.81044797	129.98534865	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0311	19.81122319	129.97948239	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0312	19.81202921	129.97362075	4(a)(ii): 60 M from FOS	0.3350857

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0313	19.81286600	129.96776389	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0314	19.81373355	129.96191199	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0315	19.81463181	129.95606524	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0316	19.81556077	129.95022382	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0317	19.81652039	129.94438789	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0318	19.81751065	129.93855765	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0319	19.81853152	129.93273327	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0320	19.81958296	129.92691493	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0321	19.82066494	129.92110280	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0322	19.82177743	129.91529707	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0323	19.82292040	129.90949791	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0324	19.82409381	129.90370551	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0325	19.82529762	129.89792002	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0326	19.82653180	129.89214165	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0327	19.82779631	129.88637055	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0328	19.82909112	129.88060692	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0329	19.83041617	129.87485092	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0330	19.83177143	129.86910273	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0331	19.83315687	129.86336253	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0332	19.83457243	129.85763050	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0333	19.83601807	129.85190680	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0334	19.83749375	129.84619162	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0335	19.83899943	129.84048513	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0336	19.84053505	129.83478750	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0337	19.84210058	129.82909892	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0338	19.84369596	129.82341955	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0339	19.84532114	129.81774957	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0340	19.84697608	129.81208915	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0341	19.84866072	129.80643847	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0342	19.85037501	129.80079769	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0343	19.85211890	129.79516700	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0344	19.85389234	129.78954657	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0345	19.85569526	129.78393656	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0346	19.85752763	129.77833715	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0347	19.85938937	129.77274852	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0348	19.86128044	129.76717082	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0349	19.86320077	129.76160425	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0350	19.86515031	129.75604895	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0351	19.86712900	129.75050512	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0352	19.86913677	129.74497291	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0353	19.87117356	129.73945250	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0354	19.87323932	129.73394405	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0355	19.87533397	129.72844774	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0356	19.87745746	129.72296373	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0357	19.87960972	129.71749220	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0358	19.88179068	129.71203330	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0359	19.88400028	129.70658722	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0360	19.88623845	129.70115411	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0361	19.88850511	129.69573414	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0362	19.89080021	129.69032748	4(a)(ii): 60 M from FOS	0.1475135
ODR-ECS-0363	19.89181956	129.68795159	4(a)(ii): 60 M from FOS	4.2896618
ODR-ECS-0364	19.92153039	129.61888739	4(a)(ii): 60 M from FOS	0.2042864
ODR-ECS-0365	19.92295025	129.61560041	4(a)(ii): 60 M from FOS	0.3350859

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0366	19.92530197	129.61021985	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0367	19.92768190	129.60485310	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0368	19.93008997	129.59950033	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0369	19.93252612	129.59416169	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0370	19.93499026	129.58883736	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0371	19.93748232	129.58352749	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0372	19.94000222	129.57823226	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0373	19.94254988	129.57295182	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0374	19.94512524	129.56768633	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0375	19.94772820	129.56243597	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0376	19.95035869	129.55720088	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0377	19.95301663	129.55198124	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0378	19.95570193	129.54677719	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0379	19.95841452	129.54158891	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0380	19.96115431	129.53641656	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0381	19.96392121	129.53126028	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0382	19.96671515	129.52612025	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0383	19.96953603	129.52099661	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0384	19.97238377	129.51588954	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0385	19.97525829	129.51079918	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0386	19.97815948	129.50572569	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0387	19.98108727	129.50066922	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0388	19.98404157	129.49562995	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0389	19.98702228	129.49060801	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0390	19.99002931	129.48560357	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0391	19.99306258	129.48061678	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0392	19.99612197	129.47564779	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0393	19.99920742	129.47069676	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0394	20.00231881	129.46576384	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0395	20.00545605	129.46084918	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0396	20.00861905	129.45595294	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0397	20.01180771	129.45107526	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0398	20.01502193	129.44621630	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0399	20.01826162	129.44137621	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0400	20.02152666	129.43655513	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0401	20.02481697	129.43175322	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0402	20.02813244	129.42697062	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0403	20.03147297	129.42220749	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0404	20.03483846	129.41746397	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0405	20.03822880	129.41274020	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0406	20.04164390	129.40803634	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0407	20.04508363	129.40335252	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0408	20.04854791	129.39868890	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0409	20.05203662	129.39404562	4(a)(ii): 60 M from FOS	0.3350852
ODR-ECS-0410	20.05554965	129.38942283	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0411	20.05908690	129.38482065	4(a)(ii): 60 M from FOS	0.1746067
ODR-ECS-0412	20.06093965	129.38243077	4(a)(ii): 60 M from FOS	4.5818750
ODR-ECS-0413	20.10963650	129.31977605	4(a)(ii): 60 M from FOS	0.1752498
ODR-ECS-0414	20.11150206	129.31738182	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0415	20.11508735	129.31281987	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0416	20.11869653	129.30827898	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0417	20.12232949	129.30375929	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0418	20.12598612	129.29926094	4(a)(ii): 60 M from FOS	0.3350857

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0419	20.12966630	129.29478407	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0420	20.13336992	129.29032881	4(a)(ii): 60 M from FOS	0.3350852
ODR-ECS-0421	20.13709686	129.28589532	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0422	20.14084702	129.28148371	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0423	20.14462027	129.27709414	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0424	20.14841651	129.27272674	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0425	20.15223561	129.26838164	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0426	20.15607745	129.26405898	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0427	20.15994193	129.25975890	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0428	20.16382891	129.25548152	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0429	20.16773828	129.25122698	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0430	20.17166992	129.24699542	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0431	20.17562371	129.24278696	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0432	20.17959953	129.23860173	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0433	20.18359725	129.23443988	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0434	20.18761675	129.23030152	4(a)(ii): 60 M from FOS	0.3078762
ODR-ECS-0435	20.19132895	129.22652002	4(a)(ii): 60 M from FOS	18.8834787
ODR-ECS-0436	20.41942163	128.99486254	4(a)(ii): 60 M from FOS	0.1089723
ODR-ECS-0437	20.42073811	128.99352496	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0438	20.42480048	128.98942771	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0439	20.42888425	128.98535437	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0440	20.43298930	128.98130507	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0441	20.43711551	128.97727994	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0442	20.44126275	128.97327910	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0443	20.44543089	128.96930268	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0444	20.44961980	128.96535080	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0445	20.45382936	128.96142359	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0446	20.45805943	128.95752116	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0447	20.46230988	128.95364365	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0448	20.46658059	128.94979117	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0449	20.47087142	128.94596384	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0450	20.47518223	128.94216178	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0451	20.47951291	128.93838511	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0452	20.48386330	128.93463395	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0453	20.48823329	128.93090842	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0454	20.49262273	128.92720864	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0455	20.49703148	128.92353471	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0456	20.50145942	128.91988676	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0457	20.50590641	128.91626491	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0458	20.51037231	128.91266925	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0459	20.51485698	128.90909992	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0460	20.51936028	128.90555701	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0461	20.52388207	128.90204065	4(a)(ii): 60 M from FOS	0.3350864
ODR-ECS-0462	20.52842223	128.89855093	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0463	20.53298059	128.89508798	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0464	20.53755704	128.89165190	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0465	20.54215141	128.88824280	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0466	20.54676358	128.88486078	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0467	20.55139339	128.88150596	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0468	20.55604072	128.87817844	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0469	20.56070540	128.87487832	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0470	20.56538731	128.87160571	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0471	20.57008629	128.86836071	4(a)(ii): 60 M from FOS	0.3350856

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0472	20.57480220	128.86514343	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0473	20.57953490	128.86195396	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0474	20.58428423	128.85879241	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0475	20.58905006	128.85565888	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0476	20.59383223	128.85255346	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0477	20.59863060	128.84947626	4(a)(ii): 60 M from FOS	0.3350852
ODR-ECS-0478	20.60344501	128.84642738	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0479	20.60827533	128.84340690	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0480	20.61312139	128.84041492	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0481	20.61798306	128.83745155	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0482	20.62286018	128.83451687	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0483	20.62775260	128.83161098	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0484	20.63266017	128.82873397	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0485	20.63758274	128.82588594	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0486	20.64252015	128.82306696	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0487	20.64747226	128.82027714	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0488	20.65243890	128.81751656	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0489	20.65741993	128.81478531	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0490	20.66241520	128.81208347	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0491	20.66742454	128.80941114	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0492	20.67244781	128.80676840	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0493	20.67748484	128.80415533	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0494	20.68253549	128.80157202	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0495	20.68759959	128.79901855	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0496	20.69267699	128.79649500	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0497	20.69776754	128.79400145	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0498	20.70287107	128.79153798	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0499	20.70798742	128.78910468	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0500	20.71311645	128.78670162	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0501	20.71825798	128.78432887	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0502	20.72341187	128.78198652	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0503	20.72857794	128.77967464	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0504	20.73375605	128.77739330	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0505	20.73894603	128.77514258	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0506	20.74414772	128.77292255	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0507	20.74936096	128.77073329	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0508	20.75458559	128.76857485	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0509	20.75982145	128.76644732	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0510	20.76506837	128.76435076	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0511	20.77032619	128.76228525	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0512	20.77559475	128.76025084	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0513	20.78087388	128.75824760	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0514	20.78616343	128.75627560	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0515	20.79146322	128.75433491	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0516	20.79677310	128.75242558	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0517	20.80209290	128.75054768	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0518	20.80742245	128.74870128	4(a)(ii): 60 M from FOS	0.3350862
ODR-ECS-0519	20.81276160	128.74688642	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0520	20.81811016	128.74510318	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0521	20.82346799	128.74335160	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0522	20.82883490	128.74163175	4(a)(ii): 60 M from FOS	0.3350863
ODR-ECS-0523	20.83421075	128.73994368	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0524	20.83959535	128.73828746	4(a)(ii): 60 M from FOS	0.3350856

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0525	20.84498854	128.73666313	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0526	20.85039016	128.73507074	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0527	20.85580003	128.73351036	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0528	20.86121799	128.73198203	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0529	20.86664388	128.73048580	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0530	20.87207751	128.72902172	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0531	20.87751873	128.72758985	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0532	20.88296737	128.72619023	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0533	20.88842325	128.72482290	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0534	20.89388621	128.72348791	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0535	20.89935607	128.72218532	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0536	20.90483267	128.72091515	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0537	20.91031584	128.71967746	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0538	20.91580541	128.71847229	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0539	20.92130120	128.71729967	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0540	20.92680305	128.71615965	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0541	20.93231078	128.71505227	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0542	20.93782422	128.71397756	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0543	20.94334321	128.71293557	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0544	20.94886757	128.71192632	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0545	20.95439713	128.71094985	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0546	20.95993171	128.71000620	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0547	20.96547115	128.70909540	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0548	20.97101527	128.70821747	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0549	20.97656390	128.70737247	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0550	20.98211687	128.70656040	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0551	20.98767401	128.70578130	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0552	20.99323514	128.70503520	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0553	20.99880008	128.70432213	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0554	21.00436868	128.70364211	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0555	21.00994074	128.70299516	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0556	21.01551611	128.70238132	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0557	21.02109460	128.70180059	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0558	21.02667605	128.70125302	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0559	21.03226027	128.70073860	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0560	21.03784710	128.70025738	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0561	21.04343636	128.69980935	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0562	21.04902787	128.69939455	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0563	21.05462147	128.69901298	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0564	21.06021698	128.69866467	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0565	21.06581422	128.69834963	4(a)(ii): 60 M from FOS	0.3350857
ODR-ECS-0566	21.07141302	128.69806786	4(a)(ii): 60 M from FOS	0.3350853
ODR-ECS-0567	21.07701320	128.69781940	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0568	21.08261460	128.69760423	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0569	21.08821704	128.69742239	4(a)(ii): 60 M from FOS	0.3350854
ODR-ECS-0570	21.09382033	128.69727387	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0571	21.09942431	128.69715868	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0572	21.10502881	128.69707683	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0573	21.11063364	128.69702833	4(a)(ii): 60 M from FOS	0.3350860
ODR-ECS-0574	21.11623864	128.69701319	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0575	21.12184362	128.69703140	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0576	21.12744842	128.69708297	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0577	21.13305286	128.69716790	4(a)(ii): 60 M from FOS	0.3350857

point ID	latitude [degrees north]	longitude [degrees east]	Article 76 provision invoked	distance to next point [M]
ODR-ECS-0578	21.13865676	128.69728620	4(a)(ii): 60 M from FOS	0.3350858
ODR-ECS-0579	21.14425995	128.69743786	4(a)(ii): 60 M from FOS	0.3350855
ODR-ECS-0580	21.14986225	128.69762288	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0581	21.15546349	128.69784127	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0582	21.16106350	128.69809301	4(a)(ii): 60 M from FOS	0.3350859
ODR-ECS-0583	21.16666210	128.69837810	4(a)(ii): 60 M from FOS	0.3350856
ODR-ECS-0584	21.17225911	128.69869655	4(a)(ii): 60 M from FOS	0.3350861
ODR-ECS-0585	21.17785437	128.69904833	4(a)(ii): 60 M from FOS	0.3350852
ODR-ECS-0586	21.18344768	128.69943345	4(a)(ii): 60 M from FOS	0.2364290
ODR-ECS-0587	21.18739294	128.69972523	4(a)(ii): 60 M from FOS	54.4070916
ODR-ECS-0588	22.09490300	128.62754192	1: 200 M from TSB	N/A

Annex 229

International Hydrographic Organization, *Limits of Oceans and Seas*, Special Publication No. 23 (3rd ed. 1953)

INTERNATIONAL HYDROGRAPHIC ORGANIZATION

LIMITS
OF OCEANS AND SEAS

(Special Publication N° 28)

3rd EDITION 1953

IMP. MONÉGASQUE - MONTE-CARLO

150-XII-1971

On the South.

By the Northern and Northwestern limits of Bali Sea (48 l), the North and West coasts of Java to Java Hoofd (6°46' S, 105°12' E) its Western point, and thence a line to Vlakke Hoek (5°55' S, 104°35' E) the Southern extreme of Sumatra.

On the West.

The East coast of Sumatra between Vlakke Hoek and Lucipara Point (3°14' S, 106°05' E).

(o) Savu Sea:

On the North.

By the Southern limits of Flores Sea (48 j) and Banda Sea (48 g).

On the East.

By the meridian of 125° East between Alor and Timor.

On the South.

By a line from the Southwest point of Timor to the Northeast point of Roti, through this island to its Southwest point, thence a line to Poeloe Dana (10°49' S, 121°17' E) and to Tanjong Ngoendjoe, the Southern extreme of Soemba and through this island to Tanjong Karosso, its Western point.

On the West.

A line from Tanjong Karosso (Soemba) to Toro Doro (8°53' S, 118°30' E) on the South coast of Soembawa.

49.—South China Sea (Nan Hai).

On the South.

The Eastern and Southern limits of Singapore and Malacca Straits (46) as far West as Tanjong Kedabu (1°06' N, 102°58' E) down the East coast of Sumatra to Lucipara Point (3°14' S, 106°05' E) thence to Tanjong Nanka, the Southwest extremity of Banka Island, through this island to Tanjong Berikat the Eastern point (2°34' S, 106°51' E), on to Tanjong Djemang (2°36' S, 107°37' E) in Billiton, along the North coast of this island to Tanjong Boeroeng Mandi (2°46' S, 108°16' E) and thence a line to Tanjong Sambar (3°00' S, 110°19' E) the Southwest extreme of Borneo.

On the East.

From Tanjong Sambar through the West coast of Borneo to Tanjong Sampanmangio, the North point, thence a line to West points of Balabac and Secam Reefs, on to the West point of Bancalan Island and to Cape Buliluyan, the Southwest point of Palawan, through this island to Cabuli Point, the

Northern point thereof, thence to the Northwest point of Busuanga and to Cape Calavite in the island of Mindoro, to the Northwest point of Lubang Island and to Point Fuego (14°08' N) in Luzon Island, through this island to Cape Engano, the Northeast point of Luzon, along a line joining this cape with the East point of Balintang Island (20° N) and to the East point of Y'Ami Island (21°05' N) thence to Garan Bi, the Southern point of Taiwan (Formosa), through this island to Santyo (25° N) its North Eastern Point.

On the North.

From Fuki Kaku the North point of Formosa to Kiushan Tao (Turnabout Island) on to the South point of Haitan Tao (25°25' N) and thence Westward on the parallel of 25°24' North to the coast of Fukien.

On the West.

The Mainland, the Southern limit of the Gulf of Thailand (47) and the East coast of the Malay Peninsula.

50.—Eastern China Sea (Tung Hai).

On the South.

The Northern limit of the South China Sea (49), thence from Santyo the Northeastern point of Formosa to the West point of Yonakuni Island and thence to Haderuma Sima (24°03' N, 123°47' E).

On the East.

From Haderuma Sima a line including the Miyako Retto to the East point of Miyako Sima and thence to Okinan Kaku, the Southern extremity of Okinawa Sima, through this island to Ada-Ko Sima (Sidmouth Island) on to the East point of Kikai Sima (28°20' N) through Tanegra Sima (30°30' N) to the North point thereof and on to Hi-Saki (31°17' N) in Kyusyu.

On the North.

From Nomo Saki (32°35' N) in Kyusyu to the South point of Hukae Sima (Goto Retto) and on through this island to Ose Saki (Cape Goto) and to Hunan Kan, the South point of Saisyu To (Quelpart), through this island to its Western extreme and thence along the parallel of 33°17' North to the mainland.

On the West.

The mainland of China.

51.—Yellow Sea (Hwang Hai).

On the South.

The parallel of 33°17' North from Saisyu To (Quelpart) to the mainland.

Annex 230

Philippine National Mapping and Resource Information Agency, *Philippine Coast Pilot* (6th ed., 1995)

Department of Environment and Natural Resources

NATIONAL MAPPING AND RESOURCE INFORMATION AUTHORITY

COAST AND GEODETIC SURVEY

PHILIPPINE COAST PILOT

6TH EDITION

1995

Published by the Coast & Geodetic Survey Department, NAMRIA, 421 Barraca St. Binondo, 1010 Manila, Philippines.

Emmit (Mansalauit) Point, is rocky, steep, with a knoll 49 meters (160 ft) high, and surrounded by a bare cliff at the base. It is connected with the mainland by a narrow sand spit with cogon grass. A rocky ledge with several big boulders extend about 183 meters W. Two rocky islets, each about 137 meters in diameter, 27 and 33 meters (90 and 110 ft) high, are 183 meters and 548 meters N of the point, respectively.

BURY ISLETS, two in number, about 0.8 mile N of Crawford (Calitang) Point, are rocky, 18 and 21 meters (60 to 70 ft) high. They are surrounded by and on the same coral reef about 548 meters in extent.

PATUYO POINT, 2.3 miles NE of Crawford (Calitang) Point, is bold, rocky, rising 0.5 mile S to a hill 158 meters (520 ft) high.

LALUTAYA (AGUTAYAN) ISLAND, 1.3 miles NW of Patuyo Point, is about 735 meters wide, 1.2 miles long in a NNE direction, and 122 meters (400 ft) high. It has a generally bold rocky shoreline except in the indentations on the E side where stretches of sand beach border the shore and are fronted by coral reef about 365 meters wide. The channel between the island and the main shore has depths of 14.6 to 16.5 meters, sand bottom. A 0.9 meters shoal is 0.5 mile N.

BASE BAY, an open indentation extending 4 miles wide N of Patuyo Point, is practically clear with depths of 11 to 18.3 meters. The 9.1 meters curve is about 548 meters from the shore. Several villages are along this coast.

BAROTOAN BAY, on the S part of Base Bay, is 735 meters wide and 0.9 mile in a S direction with depths of 3.7 to 5.5 meters.

DIAPILA (VITO) ISLAND, about 2.5 miles N of Barotoan Bay, is rocky, about 365 meters wide, 735 meters long in a N direction, and 65 meters (215 ft) high. The channel between the island and the main shore is about 1 mile wide with depths of 10.5 to 16.5 meters.

DIAPILA BAY, 1.2 miles NE of Diapila (Vito) Island, is a semi-circular indentation about 0.5 mile in diameter, with depths of 3.7 to 11 meters. It is enclosed by steep rocky shore rising to a hill 294 meters (965 ft) high on the S side and another 145 meters (475 ft) high N.

CALITAN (CUBAD) ISLAND, 64 meters (210 ft) high, is about 2 miles NNE of Diapila (Vito) Island and 0.5 mile W of Libro Point. A sharp double rock is between the island and the main shore. The channel is generally foul on account of the reefs that span across it. A rock awash is 0.5 mile SSE of the island.

KALAYAAN GROUP
CHARTS 4716, 4723

KALAYAAN ISLAND GROUP is an extensive shoal area marked Dangerous Ground on chart and separated from mainland Palawan by the deep Palawan Passage utilized mainly by VLCCs transitting through Malacca to the industrialized countries of N Asia. This area is characterized by numerous shoals, reefs, cays and banks, and therefore not recommended for any passing vessels.

BAYBAYIN DAGAT BANK is the most N danger known on the W Side of Palawan Passage. In 1993, its location was found to be about 16 miles SE of its charted position when surveyed by Global Positioning System. It is as charted 7 miles NE of Mahiwagang Diwata (Fairie Queen) and 70 miles NW of Piedras Point.

The bank has a least depth of 8.2 meters (27 ft) over it with depths of from 35 meters to 53 meters (19 to 29 ft) inside the reef. In 1961 two reported depths of 360 meters and 336 meters were found to exist 20 miles W and WSW respectively of this shoal.

MAHIWAGANG DIWATA (10° 38'N, 117° 39' E) with a depth of 16.5 meters (54 ft), lies 12 miles SW of Baybayin Dagat.

LAPU LAPU SHOAL (10° 20' N, 117° 19' E) with depth of 14.6 meters (48 ft) over it is situated 27 miles SW of Mahiwagang Diwata.

SIKATUNA SHOAL (10° 06' N, 117° 22' E) with depth of 6.4 meters (21 ft) over it, lies 14 miles SSW of Lapu Lapu.

MABUHANGIN SHOAL (11° 02' N, 117° 39' E) lies 13 miles NW of the N extremity of Baybayin Dagat.

The positions of these four shoals were reported to be doubtful.

LESLIE BANK (11° 04' N, 117° 28' E), with a depth of 16.5 meters (54 ft) over it, lies 22 miles NW of N extremity of Baybayin Dagat.

DALAG BANK (11° 01' N, 117° 16' E) lies with its S extremity and shoalest depth of 18.3 meters (60 ft) 12 miles WSW of Leslie Bank.

DEL PILAR REEF lies 50 miles W of Baybayin Dagat. Its limits has not been clearly defined. A rock awash (10° 48' N, 116° 52' E) lies 28 miles SW of the S extremity of Dalag Bank.

KAHOY BANK (10° 35' N, 117° 10' E) with depth of 18.3 meters (60 ft) over it, lies 16 miles NNW of Lapu Lapu.

BROWN, a danger whose existence is doubtful, is charted 7 miles W of Kahoy Bank.

SOUTHERN BANK lies with its NE extremity (10° 41' N, 116° 50' E), 20 miles WNW of Kahoy Banks. It extends 33 miles SW and has several patches with depths of less than 9 meters (30 ft) on it. Foulerton Reef, with a depth of 5.5 meters (18 ft) over it lies 13 miles W of Kahoy Bank on the E extremity of Southern Banks. Little Patches, on the SE side of Southern Banks, about 22 miles SW of Foulerton Reef, have depths of from 5.5 meters to 14.6 meters (18 to 48 ft) over them.

IROQUOIS REEF (10° 37' N, 116° 11' E) and **BANKER REEF** 0.5 mile N, both awash, lies on the S extremity of Amy Douglas Bank, 20 miles E of Lawak Island. Hirane Shoal, with a rock with less than 1.8 meters (6 ft) of depth over it lies 18 miles NE of Baker Reef. Many shoals and reefs with depths of less than 18 meters (60 ft) dotted the area.

RECTO BANK lies approximately 30 miles NW of N extremity of Dalag Bank. Its limit have not been defined. A depth of 21 meters was found and patch of discolored water 5 miles SE was reported. Marie Louise (11° 55' N, 116° 47' E) a bank with a depth of 27 meters (15 fm.) over it was reported to lie 30 miles NNW of the 21 meters shoal on Recto Bank.

NARES BANK lies with its shoalest head (11° 16' N, 116° 03' E) with a depth of 18.3 meters (60 ft) near its S extremity 35 miles, NNE of Patag I (Flat I). It extends about 30 miles NNE although its N limit has not been defined.

PATAG I is a low flat sandy cay from which a fringing reef extends 2 miles SE and NE. Its charted position (10° 50.0' N, 115° 51.0' E) was reported off by 0.70 mile W when surveyed by Global Positioning System (GPS) in 1993. A shallow reef extends S from it to within 1 mile of Lawak Island. A large bank of anchorage water with depths of about 20 meters extends 8 miles SE, although it has not been closely examined.

HOPKINS REEF (10° 49' N, 116° 06' E) nearly awash and which breaks heavily lies 16 miles E of Patag Island.

LAWAK ISLAND (10° 44' N, 115° 48' E), 2 meter (8 ft) high lies 0.5 mile S of Patag I. It has few coconut trees upon it. Its charted position (10° 44' N, 115° 48' E) was reported off by 0.5 mile NW when determined by GPS in 1993.

QUIRINO ATOLL has 5 drying reefs which encircles a Lagoon with depths of up to 47 meters (26 fms). There are four main entrances to the lagoon. The NW entrance is 0.75 mile wide and has a least depth of 8.5 meters (28 ft). The N entrance which is 2 miles wide has a least depth of 10.4 meters (34 ft). The NE and E entrances, each about 1.2 miles wide with least depths of 16.2 meters and 16.8 meters (53 and 55 ft) respectively are separated by a shoal with least depth of 7.3 meters (24 ft) over it.

ANCHORAGE with good holding ground, sand and coral can be obtained anywhere within the lagoon, but there is no shelter from bad weather.

SHINKO SHOAL whose existence is doubtful was reported in 1941 to be in existence 13 miles E of Quirino Atoll.

BONIFACIO REEFS consists of Jacinto Reef and Diego Silang Reef situated 5.5 miles apart.

DIEGO SILANG REEF (Hopps Reef) lies 27 miles SW of Quirino Atoll.

JACINTO REEF situated 5.5 miles SW of Diego Silang Reef encloses a lagoon which could be accessible to boats at high water, when a few rocks on it may be visible.

HUBO REEF (HANDY REEF) lies 30 miles SE of Quirino Atoll. It dries and has a narrow strip of sand in the middle.

SABINA SHOAL lies 60 miles SW of Sikatuna Shoal and extends 12 miles WNN. The E portion consist of a number of reefs awash, while the W port is a lagoon over which there are depths of from 3.7 meters to 18.3 meters (12 to 60 ft). Anchorage can be had in many places close to the edge of the bank although the shoal is steep-to and offer no shelter in bad weather. Several underwater rocks whose existence are doubtful encircle its E side at an average distance of 0.7 miles.

ABAD SANTOS SHOAL (9° 26' N, 111° 55' E), 3.7 miles long in an E-W direction lies 25 miles SE of Sabina Shoal. It is steep-to. The lagoon with depths of from 29 meters to 33 meters (16 to 18 fms), sand is completely enclosed by the coral reef on which there are several rocks which dry 0.6 meters (2 ft), the more prominent of which lie on the NW and N parts. Two stranded wrecks lie on the NE side of the shoal.

TIDAL STREAMS in the vicinity were observed to set NE when the tide is rising.

RAJAH SOLIMAN REEF (9° 36' N, 116° 10' E), dries and lies 20 miles SW of Sabina Shoal. An underwater rock, existence doubtful, is charted 14 miles ESE.

AYUNGIN SHOAL (2ND THOMAS SHOAL) lies which its N extremity (9° 49' N, 115° 52' E) 37 miles W of Sabina Shoal and extends 11 miles in a N-S direction. The reef encloses a lagoon where depths of 27 meters (15 fms) can be found and which may be accessible by boats on the E side. There is no anchorage in the vicinity.

PANGANIBAN REEF (MISCHIEF REEF), (9° 55' N, 115° 31' E), awash, is situated 22 miles NW of Ayungin Shoal. The average depth inside the lagoon is 26 meters (14 fms). The SW half is free of danger and affords good shelter while the NE part is encumbered with coral heads, most of which have depths of less than 1.8 meters (6 ft) over them.

There are 3 entrances to the lagoon, 2 on the S side and one on the SW. The most W of the 2 entrances on the S side has depths of more than 18 meters (60 ft) while the rest are only boat channels. The deepest water lies in a slight curve approximately parallel to the edge of the reef on the W side; it begins in an 005° direction and enters the lagoon in a 354° direction. Vessels of less than 90 meters in length could have little difficulty in using this channel although the safe width does not exceed 37 meters. Care must be observed on account of tidal streams which attain a rate of 1.5 knots and set partly across the entrance. A track W of the deepest water is recommended.

ALICIA ANNIE REEF (9° 22' N, 115° 26' E) lies 33 miles SW of Ayungin Shoal, dries and enclose a shallow lagoon dotted with numerous rocks visible at high water. Anchorage may be obtained off the N end in depths of 55 meters (30 fms).

BULIG SHOAL (9° 20' N, 115° 56' E) is situated 25 miles SSE of Ayungin Shoal. The reef with few rocks dries and encloses a shallow lagoon which probably is accessible to boats at high water.

DALAGANG BUKID SHOAL (INVESTIGATOR NE SHOAL), (9° 10' N, 116° 25' E), dries and lies 32 miles ESE of Bulig Shoal. It encloses a lagoon which may be accessible to boats at high water.

KANDULI SHOAL (9° 03' N, 116° 41' E) is situated on the W side of the narrowest portion of Palawan Passage 63 miles W of Eran Bay Palawan and 14 miles SE of Dalagang Bukid Shoal. It consists of an unbroken coral reef on which there are few drying rocks. A rock which dries 1.2 meters (4 ft) lies on the NW corner of the reef. The outer edge of the reef is steep-to with depths greater than 183 meters (100 fms). Boats can enter the lagon at high water where depths of 27 meters to 31 meters (15 to 17 fms), sand and coral can be found.

Two stranded wrecks lie on the NW and SW sides respectively of the shoal.

TIDAL CURRENT. A W set of 0.7 knot has been observed in the vicinity.

HASA HASA SHOAL (8° 54' N, 116° 16' E) lies 26 miles SW of Kanduli Shoal and 63 miles NW of Cape Baliluyan, the S extremity of Palawan. A belt of coral, awash, on which an inclined rock lies on its E side enclosed a lagoon which offers good shelter to small crafts. It has an average depths of 27 meters (15 fms), but there are several coral heads with depths of from 0.3 meter to 5.5 meters (1 to 18 ft) over them. The entrance on the SE side of the reef SW of the inclined rock has a depth of 12.8 meters (42 ft). During NE monsoon however (December to February) entry might be impossible.

RIZAL REEF with its E extremity (8° 21' N, 115° 18' E) lies 65 miles SW of Hasa Hasa Shoal. It dries in patches around its whole circumference and contains two lagoon, with a sand cay, 0.5 meters (1 ft) high on the neck between them. The W lagoon can be entered at high water, the best place being 2 miles on the N and S sides. General depths are from 5.5 meters to 14.6 meters (18 to 48 ft) but there are groups of below water rocks in places. The E Lagoon which appears shallow and foul has not been closely examined.

AGUINALDO REEF is situated 7 miles E of the E extremity of Rizal Reef. A number of dangerous underwater rocks whose existence are doubtful were reported in the vicinity. Northeast Shoal is about 9 miles N, Tanban (Director) 42 miles ENE, Bulig 18 miles NE, Maya-Maya 20 miles SE, USS Plymouth 34 miles SSW and Tomas Clandio 30 miles SW all of Rizal Reef.

INVESTIGATOR SHOAL lies with its W extremity (8° 07' N, 114° 29' E) 21 miles E of Erica Reef. The irregular atoll formation surrounded entirely by coral reef, it extends 18 miles E and dries in places but mainly has depths of between 5.5 meters and 18.3 meters (18 to 60 ft). Some rocks are visible at high water at the W end. There appears to have good entrance at the SE end with a depth of 37 meters (20 fms). The lagoon formation has depths of probably more than 46 meters (25 fms) and may offer good anchorage in fine weather.

ERICA REEF (8° 06' N, 114° 09' E), 13 miles ENE of Mariveles Reef dries and encloses a shallow lagoon. Some rocks may appear at high water on its E side.

ANTONIO LUNA REEF (7° 38' N, 113° 56' E), the W extremity of Antonio Luna Bank lies 14 miles NNE of Swallow Reef. The shallow lagoon which is enclosed by a reef that dries may be accessible to boats at HW. The reef is steep-to except on its E side, where it join's Antonio Luna Bank.

ANTONIO LUNA BANK (ARDESIER BANK) which extends 37 miles ENE from Antonio Luna Reef is surrounded by a fringe of coral, over which the depths vary from 3.7 meters to 18.3 meters (12 to 60 ft). The depths in the center of the bank are estimated to be between 37 meters to 55 meters (20 to 30 fms).

MARIVELES REEF (8° 00' N, 113° 56' E) is situated 15 miles SW of Erica Reef. It dries and entirely encloses two lagoons. A sand cay 2 meters (5 ft) high lies on the neck between the two lagoons and some isolated rocks may be just visible at H W.

DALLAS REEF lies 5 miles W of Antonio Luna Reef and dries. The reef entirely encloses a lagoon. The lagoon may be accessible to boats at HW. A shoal, with a depth of 16.5 meters (54 fms), exist in 7° 35' N, 114° 39' E, about 18 miles SE of the SE side of Antonio Luna Bank. A bank with a depth of 82 meters (45 fms) over it lies 24 miles farther SSE.

SWALLOW REEF lies 14 miles S of Dallas Reef and is marked by breakers formed by a narrow belt of coral surrounding a shallow basin. Rocks from above-water to 3 meters (10 ft) high dotted its SE to E sides. A stranded wreck lies near the W end of the reef. A light is exhibited from a gray triangular concrete tower.

ROYAL CHARLOTTE REEF (6° 56' N, 113° 36' E) lies 30 miles SSW of Swallow Reef, nearly rectangular in shape and with some boulders 1 meter (2 to 4 ft) high near its SE end and some rock awash on its NE side. Foul ground extends 8 miles NNE. Breakers have been reported observed over this reef. A light is exhibited from a gray triangular concrete tower.

KALANTIYAW CAY (7° 53' N, 112° 55' E) is 2 meters (8 ft) high and situated 62 miles ENE of Antonio Luna Reef. It has two parts consisting of the E which has a sand beach and broken coral and the W strewn with debris and covered with a bed of guano. It is surrounded by coral ledges which partly dry and upon which the sea breaks heavily with any swell. An obelisk 3 meters in height stands on the SW part of the cay. A reef extends 0.5 mile NW from Kalantiyaw Cay while a bank extends 1 mile NE with a depth of 7.3 meters (24 ft) over it. A fairly sheltered anchorage on the bank NE of Kalantiyaw Cay can be obtained in the SW monsoon (May to September) in a depth of 9 meters (30 ft). Good anchorage exists with the center of the cay bearing 224° distant 1 mile in a depth of 15 meters (49 ft). Caution is required when anchoring as the banks are exceedingly steep-to.

TIDES AND TIDAL STREAMS observed at Kalantiyaw Cay 2 days before neap tides indicated water commence rising at 2300 and falling at 0600, the rise and fall being doubtful. When the tide was rising, the stream set N while falling set W with maximum rate observed being 1.5 knots.

MASCARDO REEF which dries, is situated with its SW extremity (8° 04' N, 113° 12' E) 20 miles NE of Kalantiyaw Cay. It extends 18 miles NE where there is a group of rocks, 2 meters (6 ft) high. Boats can probably reach a lagoon in the middle of the narrow reef. Anchorage can be found on a spit, at the N extremity of the reef on which there are heavy overfalls, in a depth of 37 meters (20 fms).

STAG SHOAL was reported in 1802 to be in position 8° 24 N, 112° 57' E but investigations in 1862 and 1867 failed to confirm its existence.

RIFLEMAN BANK lies 75 miles W of Kalantiyaw Cay, consists of sand and coral with shallow patches round the edges, within which are greater depths.

BOMBAY CASTLE (7° 56' N, 111° 42' E) is the shoalest part of Rifleman Bank and lies at its N end. It has a depth of 3 meters (10 ft) upon which the sea breaks, in the calmest weather. Johnson Patch, with a depth of 7.3 meters (24 ft) over it lies on the W side, Kingstorm Shoal with a depth of 11.0 meters (36 ft) lies at its S end and Orleana Shoal with a depth of 8.2 meters (27 ft) is situated on the E side.

OWEN SHOAL with depth of 6.4 meters (21 ft) and encircled with dangerous underwater rocks lies 20 miles NE of Bombay Castle.

LAGOS ISLAND (SPRATLEY ISLAND), (8° 39' N, 111° 55' E) is 2 meters (8 ft) high and lies 45 miles N of Bombay Castle. The island is flat with white sand and broken coral. It is frequented by a large number of birds. In 1963, the island was covered with short green vegetation. An obelisk 6 meters high stands at the S point of the island. The palm trunks are conspicuous.

The island is surrounded by drying rocky ledges and coral heads; it lies on the S edge of a coral bank which is over 1 mile long and 0.9 mile wide. There are depths of less than 5.5 meters (18 ft) extending 0.5 mile from the island. The E side is steep-to with depths of 18 meters (60 ft). Depths of less than 5.5 meters (18 ft) lies on the SW and W side, before the bottom falls away steeply into deep water.

LANDING is possible on the lee side of the island during the SW monsoon (May to September), but dangerous in a swell due to numerous coral heads close to the beach.

ANCHORAGE is possible on the bank either NE or SW of the island. The NE anchorage appears to be better even with a NE wind, as the bank is less steep-to. It is dangerous to venture into depths of less than 18 meters (60 ft) due to the sheer and uneven nature of the bottom.

Tidal stream observation in the summer months indicated one tide during the 24 hours. In the early part of July, HW was at 0900, the rise and fall being 1.5 meters (5 ft). The stream set SW during the rising tide at the NE end of the bank and from SE to NE during the falling tide.

LADD REEF (8° 38' N, 111° 40' E) lies 15 miles W of Lagos I. The reef consist of coral, encloses a lagoon, white sand bottom which dries in parts. It is not possible for boats to cross over into the lagoon. In 1976, 3 conspicuous stranded wrecks lay on the reef; on the NW extremity is the wreck of a 7200 ton steamship which gives a good radar response, and the other wrecks lies about 2 miles ENE and 1.5 miles ESE from it.

JUBILEE BANK (8° 30' N, 111° 29' E) with a depth of 278 meters (152 fms) was reported in 1972 to lie 11 miles SW of Ladd Reef. In 1968, a bank with a depth of 402 meters (220 fms) was reported to lie 18 miles SW of Jubilee Bank. Another one with a depth of 402 meters (223 fms) was reported in 1968 to be in existence 17 miles SW of Jubilee Bank.

DHAULLE SHOAL was reported to lie in position 9° 32' N, 112° 24' E, but its existence has never been confirmed, and in 1868, a sounding of 1938 meters (1060 fms) was obtained in the locality.

QUEZON REEFS consist of 4 reefs extending 38 miles E from Kanluran Reef (West Reef, 8° 51' N, 112° 13' E), the most W situated 21 miles NE of Lagos Island.

Great caution should be observed when navigating in the vicinity of Quezon Reefs as they are steep-to and sounding is of little value. They should not be approached with the sun ahead, when it becomes difficult to distinguish shoal water or breakers.

Several detached drying coral heads lie around the edge of Kanluran Reef; a sand cay 1 meter high lies on the E side. There are depths of 11 meter to 18 meters (36 to 60 ft) in the middle of the reef, with several coral heads. The middle may be approached from the SE side, but due to coral patches this is hazardous.

GITNA REEF, coral, awash, with a lagoon lies 8 miles NE of Kanluran Reef. There are depths of from 7 meters to 15 meters (24 to 49 ft) within the belt of coral. A sandbank reported to cover at HW springs lies on the SW extremity of Gitna Reef. Unlike Kanluran Reef and Silangan Reef, this reef is not always marked by breakers.

SILANGAN REEF enclosing a lagoon, with depths of from 7 meter to 15 meters (24 to 49 ft) lies 16 miles E of Kanluran Reef. The sea breaks heavily on the reef with one or two rocks which seldom cover at its W extremity. There is no known entrance to the lagoon.

CALDERON REEF (8° 53' N, 112° 50'E) E of Silangan Reef and is encumbered by rocks especially on its N side, where some are from 1 meter to 2 meters (4 to 5 ft) high. Anchorage may be obtained in a depth of 27 meters (15 fms) on the N side; the S side is steep-to.

Tidal streams set E and W along the N side of Calderon Reef.

CORONATION BANK (9° 21' N, 111° 44' E) with a depth of 288 meters (158 fms) lies 40 miles NW of Kanluran Reef. There is a depth of 18 meters (99 fms) 12.5 miles WSW of the 288 meters (158 fms) depth. In 1970, a depth of 248 meters (136 fms) was reported 12 miles SW of Coronation Bank.

KAGITINGAN REEF, lies with its SW extremity (9° 33' N, 112° 54' E) 40 miles N of Calderon Reef. The reef is steep-to and composed of patches of coral, several of which dry or are awash with depths of from 15 meters to 40 meters (8 to 22 fms) between them. The whole reef covers at HW except a prominent rock (9° 33' N, 112° 53' E), 1 meter high, situated on the SW side of the largest drying patch near the SW end of the reef. The sea does not cover this reef in calm weather. A dangerous wreck lies 4 miles SW of the NW extremity.

ANCHORAGE may be had in depth of 24 meters (13 fms) with the prominent 1 meter high rock bearing 062°, and also between the shoals near the SE end of Kagitingan Reef in depth of 20 meters (11 fms).

MARALIE REEF (9° 13' N, 113° 40' E) with depth of 1.8 meters (6 ft) over it and steep-to lies 50 miles SE of the SW extremity of Kagitingan Reef.

HIZON REEF dries and lies with its SW extremity (8° 56' N, 113° 40' E) 107 miles S of Maralie Reef. It encloses a lagoon to which there is no apparent entrance, but may be accessible to boats at HW. There is a sand cay, 1 meter high, on the NE extremity. The standard wreck of a steamship (2280 tons) lies on the NW end of Hizon Reef. There is anchorage off the NE end of the reef, in depth of 27 meters (15 fms).

ALISON REEF, which dries and encloses a lagoon, lies with its W extremity (8° 51' N, 113° 54' E) 15 miles SE of Hizon Reef and extends 11 miles ESE. The lagoon appears to be foul and shallow where an entrance with a depth of 9 meters (30 ft) exist on the N side and 2.5 miles from the W end of the reef. The S side of the reef consists of a number of drying patches, between which there are narrow channels with depths of 9 meters (30 ft). Anchorage can be obtained close to the W and SE ends of Alison Reef, in depths of 60 meters (33 fms); also along its S side and off the N entrance to the lagoon in depths of 9 meters (30 ft).

OSMEÑA REEF lies with its N extremity (8° 47' N, 114° 11' E) 6.5 miles E of Alison Reef. The reef which dries, encloses a lagoon with depths of 9 meters (30 ft), in which there are several coral patches.

TENNENT REEF, which dries is situated with its SW extremity (8 ° 50' N, 114° 36' E) 25 miles ENE of Osmen~a Reef. There are numerous above-water rocks on the reef which encloses a lagoon. The lagoon may be accessible to boats at HW.

MARIANO CAy was reported in 1940 to be 16 miles SE of Osmeña Reef. A depth of 285 meters is situated 15 miles E of Mariano Cay. Two underwater dangerous rocks lies 55 miles NE of the 285 meters depth while a third is situated 18 miles farther N.

PAGKAKAISA BANKS AND REEF extends 30 miles NE from Mabini Reef (Johnson Reef) and consist of a group of many drying reefs, surrounding a large area of shoal water. This formation has not been closely examined, but there is no doubt that there are numerous good entrances and that the reefs enclose an area of anchorage water. This area does not provide adequate protection in bad weather.

DULONG SHOAL AND PALMA REEF are 25 miles E and SW respectively of Mabini Reef. Both were reported in 1940 to be of doubtful existence.

CORNWALLIS REEF is situated about 10 miles N of Pagkakaisa Banks and Reefs. It consist of underwater dangerous rocks whose existence was reported to be doubtful.

RUROK ISLAND (9° 53' N, 114° 20' E), 4 meters (12 ft) high, lies on the W side of the banks, 9 miles N of Johnson Reef. Whitson Reef lies at the NE extremity of the banks and reefs; Holiday Reef lies 6 miles WSW of the NE extremity of Whitson Reef. A drying reef, with a drying cay on it lies 3 miles S of Holiday Reef.

DISCOVERY SMALL REEF (10° 01' N, 114° 01' E), 19 miles NW of Rurok I, is a round coral patch, which dries and is very steep-to.

PAREDES REEF lies with its S end (10° 01' N, 113° 52' E) 9 miles W of Discovery Small Reef. Most of the reef dries and there are several above-water rocks. There is a lagoon in the center, which appears to have no entrance. The reef is steep-to.

GOMES REEF (10° 16' N, 113° 37' E) lies 17 miles WNW of the N extremity of Paredes Reef. There are underwater rocks at the SW end of Western Reef and depths of from 1.8 meters to 5.5 meters (6 to 18 ft) in other places; it is steep-to and dangerous.

TIZARD BANK lies about 40 miles E of Gomes Reef. It consists of a lagoon bordered by shoals, with irregular depths and drying reefs. There are islands on two of the reefs and a sand cay on another. Several coral heads, with depths of from 7 meters to 12.8 meters (23 to 42 ft) over them lie in the lagoon.

LIGAW ISLAND (10° 23' N, 114° 22' E) lies near the NW end of Tizard Bank. A reef, defined by breakers surround the island and extends up to 0.5 mile offshore. Ligaw Island is covered with scrub and trees, 8 meters (25 ft) high. A concrete landing jetty stands near the SW end of the island, with a depth of 0.6 meters (2 ft) at its head. There are several partially demolished buildings and two shallow wells; a lookout mast 15 meters in height, stands near the E end of the island. Three stranded wrecks lie 0.1 mile SSW of the E extremity of the island. A 5.5 meters (18 ft) shoal, with a 3.7 meters (12 ft) patch close S of it lies 0.6 mile WSW of the W extremity; a 6.4 meters (21 ft) shoal lie 6.3 mile S of the patch.

ANCHORAGE may be obtained 0.6 mile SSE of the W end of Ligaw Island in a depth of 18 meters (10 fms). The best approach from seaward to this anchorage is through the deep-water channel close to the E end of the island. A reef, covered at HW, lies 2 miles E. A 6.4 meters (21 ft) shoal lies near the middle of the channel between them. In 1954, less water was reported in this vicinity. In 1951, a sand cay, with bushes 5 meter high on it, lay 3.5 miles E of the last mentioned reef to which it is connected by a ridge, over which depths are irregular. Safe anchorage may be obtained on this ridge in depths of 13 meters to 18 meters (42 to 60 ft). The sand cay is surrounded by a reef extending 0.5 mile offshore. There is a depth of 10.1 meters (33 ft), 2 miles W of the cay. Two 8.5 meters (28 ft) patches lie 1.5 miles WNW of the cay; several shoals with depths of from 6.7 meters to 10.1 meters (22 to 33 ft) over them lie between these patches and the cay. In 1959, less water than charted was reported 0.6 mile W of the NW end of the cay, and the same distance SE of the SE end.

PETLEY REEF lies near the extremity of a steep-to coral ledge and extends 5 miles from the NE side of Tizard Bank. Several shoals, with depths of from 5.5 meter to 8.5 meters (18 to 23 ft) over them lies on this ledge.

MALVAR REEF (10° 21' N, 114° 42' E) lies at the E end of Tizard Bank, 7 miles SE of Petley Reef. A few large and many small above-water rocks lie on this reef. The NE end of Malvar Reef is narrow and steep-to; a ridge extends 1 mile NE on which depths increase to over 91 meters (50 fms).

BINAGO ISLAND, 18 meters (61 ft) high, covered with small trees and bushes, lie on the S side of Tizard Bank, 11 miles S of Ligaw Island. It is surrounded by a reef, which extends 1 mile W and 0.3 mile in other direction. A 4.6 meters (15 ft) patch lies 1 mile NE of Binago Island; a shoal, with a depth of 6.7 meters (22 ft) over it, lies 2.2 miles WSW of the island.

GAVEN REEFS (10° 12' N, 114° 13' E) two in number 2.5 miles apart in a NW direction, form the SW end of Tizard Bank. The SE reef lies 6.2 miles W of Binago Island. Gaven Reefs cover at HW; coral heads lie between them, with a depth of 6.4 meters (21 ft), 0.7 mile NW of the SE reef. Anchorage for shallow draught vessels can be obtained in fine weather almost any where on the banks surrounding the lagoon, but caution should be exercised. Fisherman usually visit the islands in December and January and leave at the start of the SW monsoon.

KOTA BANK is steep-to and consists of a lagoon surrounded by shoals, over which the depths are irregular. On the S edge of the bank there are reefs, on two of which there are cays and on the S most, an island.

KOTA ISLAND (10° 41' N, 114° 25' E), 2 meter (6 ft) high, lies at the S end of Kota Bank, 18 miles N of Ligaw Island. The island is covered with mangroves bushes, trees and coconut palms. The island is surrounded by a drying reef.

There is anchorage on Kota Bank with Kota Island bearing 260° distant 0.4 mile. The reef is visible from this position. A 5.5 meters (18 ft) shoal lies 2 miles W of Kota I; 2 reefs, 1 mile apart in a NE direction, lie 5 miles NW. A 5.5 meters (18 ft) shoal lies 0.7 mile E of the SW reef. A sand cay can be found in the middle of the NE reef. In 1868, no depth of less than 7.3 meters (24 ft) was found anywhere on the NW edge, NE of the last mentioned reefs. A partly drying coral patch lies 2 miles ENE.

PANATA ISLAND (10° 43' N, 114° 31' E) lies 6.5 miles ENE of Kota Island. It is sandy and situated near the middle of a reef which extends up to 0.5 mile from it in places. Two drying coral reef lie respectively 3 to 4 miles NE of Panata Island. Depths of 11 meters (36 ft) and less extends 1 mile N from the latter reef and an 11 meters (36 ft) patch lie 0.5 mile N from the reef situated 3 miles NE. The E edge of Kota Bank extends 8.5 miles N from the last mentioned reef.

MENZIES REEF (11° 09' N, 114° 48' E), awash, lies 30 miles NNE of Panata I. A ridge of foul ground, from 2 to 5 miles wide, extends 20 miles NE from the N extremity of Kota Bank to Menzies Reef. There are depths of from 3.7 meters to 48.7 meters (12 ft to 25 fms) on this reef; the shallowest known head lies 9 miles SSW.

IRVING REEF (10° 52' N, 114° 55' E) which dries in patches and encloses a lagoon lies 27 miles ENE of Panata I. There is a small sand cay near the N end of the reef. A 2.3 meters (7 ft) patch lies 2 miles SW.

LAPU-LAPU REEF, an underwater rock lies 23 miles SE of Irving Reef.

LIKAS ISLAND (11° 05' N, 115° 01' E) situated 13 miles NNE of Irving Reef, is covered with trees and bushes. It has some tall coconut trees at the E end. A reef with a depth of less than 1.8 meters (6 ft) extends 2 miles N from the island.

PAGASA ISLAND (11° 03' N, 114° 17' E), 3 meters (11 ft) high lies 24 miles NNW of Kota Island. It is situated near the E end of the most W of two coral banks, separated by a narrow and deep channel, and consists of several dangerous patches. The island is surrounded by a drying reef which extends up to 0.5 mile from its NE side. It is covered with grass and scrub, up to 18 meters high except at a palm grove at its SW end. A well, with brackish but drinkable water exists near the beach through the palm grove. Pagasa Island light (11° 02.3' N, 114° 16.9' E) displayed atop a, structure exhibits Flashing White every 5 seconds.

PAGASA ISLAND is inhabited by fishermen. Landing is best achieved during the NE monsoon (May to September) in the middle of the W side where there is an opening in the fringing reef. The W bank extends 6 miles W with reefs and irregular depths on its edges and greater depths within. A reef lies 1.5 miles NW; irregular depths of from 4.6 meters to 14.6 meters (15 to 48 ft) exist in the channel between them. A drying reef with a sand cay near its center, lies 1.2 miles WSW of the above reef. In the middle of the passage between the 2 reefs leading into the lagoon, there is a 9 meter (30 ft) shoal. A reef forming the W extremity of the W bank lies 2 miles WSW of the sand cay with detached reefs always marked by breakers, between them. Another small reef lies on the S edge of the bank 2 miles SW. The S edge of the bank is not so dangerous as the N edge. The E bank is a mass of reefs and shoal patches; its W edge lies 3.7 miles E of the reef extending from Pagasa Island Anchorage may be obtained by shallow draught vessels on the S edge of the W bank, with the sand cay bearing between 328° and 036°. There is also anchorage 1 mile SW in a depth of 18 meters (60 ft) in which pòsition the reef is visible.

ZAMORA REEF (10° 54' N, 114° 06' E) which usually breaks and is steep-to, lies 14 miles SW of Pagasa Island. The reef is composed of coral which dries and surrounds a lagoon into which there appears no passage.

NORTH DANGER REEF (11° N, 114° 21 E) of coral formation and steep-to lies 21 miles N of Pagasa Island. The middle of the formation is remarkably flat and even, with depths of 37 meters to 47 meters (20 to 26 fms) over its quarter part except for a 14.6 meters (48 ft) patch near the center of the lagoon. The Lagoon is surrounded by a shallow reef of varying width on which there are many dangers, with depths of less than 9 meters (30 ft) over them. Extensive areas of this reef dry in patches at the NE and SW ends of the formation. Two islets are situated on its NW side. All the known dangers are plainly visible in good light condition. During the NE monsoon (October to March) the sea breaks heavily on the NE side at the NE end of North Danger Reef.

PAROLA ISLAND, (11° 27' N, 114° 21' E), 3 meters (10 ft) high, lies 1.5 miles WSW of North Reef. It is covered with coarse grass, with a fringe of low bushes round the edges. The cay is thickly wooded, with trees 6 meters to 9 meters high. It lies on a drying reef which extends 0.6 mile NE. A channel 0.3 mile wide lies between the charted 5.5 meters (3 fms) lines between the NE edges of this reef and the W extremity of North Reef. This channel should not be attempted as several shoals with depths of 3 meters (10 ft) over them, lie in the middle.

PAROLA ISLAND LIGHT (11° 27' 54" N, 114° 21' 26" E) displayed at an elevation of 7 meter from a structure exhibits Group Flashing Red (2) every 10 seconds and visible 5 miles on the N end of the cay.

PUGAD ISLAND, thickly wooded with trees 9 meters high and covered with coarse grass lies 1.7 miles SW of Parola Island. A channel, with a 5.5 meters (18 ft) patch, 0.7 mile SW of NW Cay and a 9.5 meters (30 ft) patch 0.4 mile farther S separate the two cays. Pugad Island is a breeding place for sea birds and is covered with guano, the export of which has, for sometime, been carried out on a considerable scale. It is surrounded by a coral reef, which dries in patches and extends 90 meters from its SE side and up to 0.3 miles in other directions. Landing is possible on the SE side during the SW monsoon (May to September), even when it is blowing fresh. Two walls and a mast 12 meters in height, are situated near the center of the SE side of the islet.

JENKIN PATCHES, with a least depth of 4 meters (13 ft), lie 1 mile SW of Pugad Island. These patches occasionally breaks in rough weather.

SOUTH REEF, at the SW end of North Danger Reef, breaks heavily on its SW side during the SW monsoon.

SABINA PATCHES, with a least depth of 4 meters (13 ft), situated at the SE end of North Danger Reef, 3 miles SE of Pugad Island. A shoal with a depth of 4.9 meters (16 ft), lies 0.2 mile NE of the NE extremity of Sabina Patches; a 6.7 meters (22 ft) shoal lies the same distance E of it; a 6.4 meters (21 ft) shoal lies 0.9 mile NE.

DAY SHOAL (11° 26' N, 114° 23' E) with a least depth of 2.7 meters (9 ft), lies 1.2 miles S of the SE end of North Reef.

IROQUOIS RIDGE extends from Parola Island to Day Shoal. It has a least depth of 8.2 meters (27 ft) located 1.5 miles SW of the SE extremity of North Reef; a deep channel between this patch and Day Shoal, 0.8 mile wide with openings toward the NW end of the ridge with greater depths. Between this ridge and North Reef, there are several patches, with depths of less than 9 meters (30 ft).

No special anchorage can be recommended, the bottom within the surrounding reef being coral and sand. Calm weather may be obtained under the lee of North Reef during the NE monsoon (October to March), while under the lee of South Reef during the SW monsoon (May to September).

CURRENTS appear to be mainly seasonal depending on the prevailing monsoon. In the middle of the formation, a rate of 0.5 knots is never exceeded, except with very strong winds. On or near the encircling reef, stronger currents over 1 knot may be expected, the direction depending on the prevailing wind, but weak currents against the wind, occur at times for short direction.

BISUGO SHOAL (11° 19' N, 114° 35' E) lies 13 miles ESE of North Danger Reef. It is steep-to and consists of a number of patches with depths of less than 18 meters (30 ft) with a lagoon in the middle. A 4.9 meters (16 ft) patch lies near the SW extremity; another depth of 9 meters (30 ft) lie near the NE end of this shoal.

TATLONG TULIS SHOAL 2 miles N of Bisugo Shoal, is steep-to and composed of coral; many patches with depths of less than 18 meters (60 ft), enclose a lagoon with greater depths. A reef, awash, lies at the N end (11° N, 114° 33' E); a 2.1 meters (7 ft) patch lies on its E side.

Annex 231

Navigation Guarantee Department of the Chinese Navy Headquarters, *Symbols identifying direction used on Chinese charts* (2006)

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SYMBOLS IDENTIFYING DIRECTION USED ON CHINESE CHARTS

中国人民解放军海军司令部航海保证部
THE NAVIGATION GUARANTEE DEPARTMENT OF
THE CHINESE NAVY HEADQUARTERS
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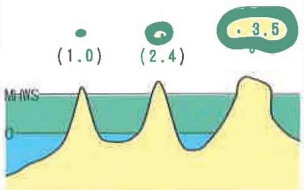
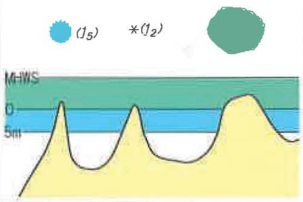
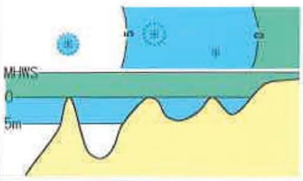
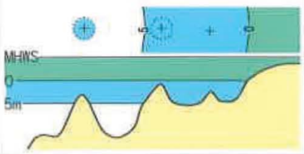
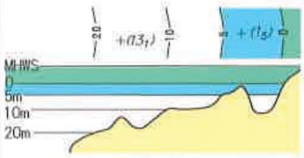
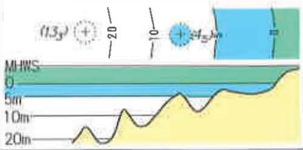
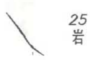
Rocks, wrecks, obstructions 礁石、沉船、障碍物 11

11.1		危险线	Danger line	13.1
11.2		经扫海或潜水员探测	Swept by wire drag or diver	13.2
11.3	礁石		Rocks	13.3
11.3.1		明礁(屿) (露出平均大潮高潮面，数字系明礁高程，高程基准面以上)	Rock (islet) which does not cover	13.3.1
11.3.2		干出礁 (平均大潮高潮面以下，深度基准面以上，数字系干出高度)	Rock which covers and uncovers	13.3.2
11.3.3		适淹礁(深度基准面适淹)	Rock awash at the level of chart datum	13.3.3
11.3.4		深度不明的暗礁 (深度基准面以下)	Dangerous underwater rock of uncertain depth	13.3.4
11.3.5		已知深度的暗礁	Dangerous underwater rock of known depth	13.3.5
		在相应水深范围内	Inside the corresponding depth area	
		在相应水深范围外	Outside the corresponding depth area	
11.3.6		非危险暗礁(深度大于20m)	Nondangerous rock	13.3.6

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Annex 232

Navigation Guarantee Department of the Chinese Navy Headquarters, *China Sailing Directions: South China Sea (A103)* (2011)

A103

中国航路指南
CHINA SAILING DIRECTIONS

南海海区
SOUTH CHINA SEA

中国人民解放军海军司令部航海保证部
THE NAVIGATION GUARANTEE DEPARTMENT OF
THE CHINESE NAVY HEADQUARTERS
2011 年

Explanation

1. In order to keep up with the present situation, after the publication of this book, a supplemental volume will typically be made available every two years. The new supplemental volume includes a retained portion from the previous supplemental volume. After the new supplemental volume is published, the previous volume immediately becomes null and void. This book should be used in conjunction with the newest supplemental volume and notice to mariners.

2. The coordinates in the main body text of this book use the CGCS2000 coordinate system. The appendix uses the 1954 Beijing coordinate system.

3. Bearing and orientation refer to the true heading and true bearing; one revolution clockwise from 000° true north is 360°. The target bearing refers to the target orientation as viewed from the sea.

4. Preliminary orientation typically uses the following 16 orientations: north, north-northeast, northeast, east-northeast, east, east-southeast, southeast, south-southeast, south, south-southwest, southwest, west-southwest, west, west-northwest, northwest, and north-northwest. When greater precision is needed, this can be expressed by adding the word “by” after the eight basic orientations.

5. Water depth refers to the depth below the lowest astronomical tide, with meters as the unit. Elevation refers to the height above the 1985 National Height Datum, with meters as the unit.

6. Length and distance units: nautical miles, chains, and meters are used for the sea and kilometers and meters are used for land.

7. Temperature is expressed in degrees Celsius (°C), the amount of precipitation is measured in millimeters (mm), barometric pressure is measured in hectopascals (hPa), wind speed is measured in meters/second (m/s), the wind force is measured using the Beaufort wind force scale, and relative humidity is expressed as a percentage (%).

8. Wind direction, wave direction, and swell direction refer to the direction of coming. The flow direction refers to the direction of going.

9. The numbers listed in parentheses after the names of mountains, islands, and drying reef state the altitude; for example, “Mount Taisen (524),” “Xidan Island (137)” and “Wolong Mountains (315).” Location names listed inside parentheses are secondary names; for example, “Cape of Xuhuang (Cape of Black Village)” and “Zixugong Reef (Perilla Rock).”

10. On the left and right sides of ports and waterways, the harbor incoming direction shall prevail. The left and right banks of the river will be determined facing downstream.

11. Cape (headland) location point refers to the end of the cape jutting out to the sea. Mountain, island, and reef locations refer to where their highest point is located. If their highest point cannot be found, then it refers to their central location. Shoal location refers to the shallowest point of the shoal. If the range is relatively great and the shallowest point is located relatively far from the center, then it refers to the central location of the shoal.

12. The distance between ships and the islands and reefs (when there are no special circumstances) refers to the straight-line distance from the ship to the nearest edge of these target destinations. The distance between two islands and reefs refers to the straight-line distance between their nearest edges.

13. Because there are considerable sediment deposits near some estuaries, the location and span of fishing nets in some sea areas and breeding zones of marine organisms often shift. Therefore, when using the book, one should be attentive to understanding the actual conditions at a particular time and location, in order to ensure navigational safety.

Huangyan Island (Democracy Reef) Located 340 nautical miles southerly of Yongxing Island, it is the only atoll among these islands to be exposed above sea level. Its shape resembles an isosceles triangle, the west side and south side are each 15 km long, and the surface area is approximately 150 sq. km. The reef basin has a crest width of 1 km ~ 2 km, and the northern part is 3.3 km at its widest part. In general, the water depth is 0.5 meters ~ 3.5 meters. Hundreds of large reef segments are distributed along the top surface and are 0.3 meters ~ 3.5 meters above sea level. The North Rock on the northwest end and the South Rock on the southeast end have a surface area of approximately 10 sq. meters. They are respectively 1.5 meters and 1.8 meters above sea level. The water depth within the lagoon is 10 meters ~ 20 meters. The east side of South Rock has a 400-meter wide waterway, and boats can come in from the open seas to anchor.

Constitution Submerged Shoal - Located 150 km northwest of Huangyan Island, with a length of 20 km, with a width of 11 km, with an elliptical shape, and the water depth is 18 meters at the shallowest section.

Central South Submerged Shoal - Located 290 km southwest of Huangyan Island, the water depth is 272 meters at the shallowest section. Together with the Constitutional Submerged Shoal, they rise steeply in the Central Basin.

Unified Submerged Shoal and Shenhu Submerged Shoal - Located between the Dongsha Islands and Xisha Islands, they developed on the upper segment of the northern continental slope. At their shallowest sections, the water depth is respectively 10.2 meters and 10.8 meters.

Article III Nansha Islands

Nautical Chart 104 10018 10019 10020 10021 17030 18050

Overview

The Nansha Islands [*English name: Spratly Islands*] were originally called the Tuansha Islands, and they are located between 03°37’~11°55’ north latitude and 109°43’ ~ 117°47’ east longitude. The width from north to south is approximately 550 nautical miles, and the length from east to west is approximately 650 nautical miles. To the north it is close by the Xisha Islands, to the south it is close to Kalimantan Island, to the east it is adjacent to the Philippines, and to the west it looks out at the Indo-China Peninsula. Taiping Island is 550 nautical miles north of the Port of Sanya. It is 187 nautical miles east of the Port of Manila. It is 830 nautical miles southwest of Singapore. It is 186 nautical miles west of the Port of Ho Chi Minh. These islands are located at the hub of the South China Sea navigational route. It is an oil and water supply point for ships, and it is a temporary mooring point for sailing ships. Among the numerous islands in China’s South China Sea, the Nansha Islands are the most southern, most widely dispersed, most extensive, and contain the most islands.

The island shoals and submerged sands of Nansha Islands are mostly formed by coral, and most of them are atolls encircling lagoons. The outside of the island and atolls is generally very steep, and the water depth increases suddenly.

The Nansha Islands has approximately a total of 550 islands, sandbars, submerged reef, submerged banks, and submerged sands. Among these, 36 islands, sandbars, and reefs are exposed above the surface of the water during high tide (16 islands and sandbars and 20 reefs). Among these, there are 13 relatively large islands, including Taiping Island, Zhongye Island, Nanqi Island, Xiyue Island, Beizi Island, Hongma Island, Nanyao Island, Anbo Sandbar, Dunqian Sandbar, Mahuan Island, Jinghong Island, and Feixin Island. Among these 13 relatively large islands, Taiping Island is the largest with a surface area of 0.43 sq. km. The total surface area of the remaining islands is only 1.6 sq. km. Hongma Island is the highest at only 6.1 meters.

According to how the Nansha Islands are spread out, they can be broadly divided into eastern, western, and southern groups. The eastern group only has several scattered reef flats. The southern group are all submerged reefs and submerged sands. Only the western group of islands is densely filled with islands and reefs. The islands and reefs in the western group of islands are bounded by 09° north latitude, and they are divided into the northeast and southwest parts. The northeast part has the most islands and reefs. This includes the five reefs of Shuangzi, Zhongye, Daoming, Zhenghe, and Jiuzhang, some scattered islands and reefs. This area is the densest distribution of Nansha Island sea area islands and reefs.

In the middle and eastern areas of the Nansha Islands, submerged reef and dangerous shoals are found everywhere, and the seabed topography is very complex.

Low-lying islands are a main feature of the islands of the Nansha Islands. All of the islands are at an elevation of 3 meters ~ 4 meters. In general there is soil vegetation, sometimes there is reef towering over, and the island is surrounded by gradual slopes of white sand shores.

Meteorological and Hydrological Conditions

Wind **-** There are obvious monsoon characteristics, and there is a distinct monsoon period. May-September is the southwest monsoon period, and November to March of the following year is the northeast monsoon period. April and October are the monsoon transition periods. If there is no typhoon activity, the time when wind force is at a minimum is during April and May, usually around level 2 ~ level 3. In April, most of the wind direction is northeast, and in May, most are east winds. After June, the southwest wind direction is relatively stable, the average wind force increases, and level 4 ~ level 5 winds have the greatest chance of appearing (accounting for 50%), followed by level 2 ~ level 3 winds (accounting for 34%). In October, it gradually turns to northeast winds, wind force is relatively small, and level 2 ~ level 3 winds have the greatest chance of appearing (accounting for 48%), followed by level 4 ~ level 5 winds (accounting for 39%). From November to January of the following year, the northeast monsoon stabilizes at mainly level 4 ~ level 5, and at times it can reach level 6 ~ level 7. The greatest wind speed once reached

35 meters/second. This was mostly the joint impact and result of typhoons and strong cold air. In February-March, the cold air recedes. Even though level 4 ~ level 5 winds often appear, the chance for level 2 ~ level 3 winds to appear has also increased. According to fishermen responses, sudden rainstorms often appear in June-August, and the wind force is great. Whenever a dense black cloud appears in the southwest, it means that strong southwest winds will follow. When the winds arrive, they often start out with …

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Nanzi Island and Beizi Island are located approximately 1.5 nautical miles from each other. The water surface is approximately 9.4 chains in width, and there is a waterway in the middle through which general vessels can navigate. Fishing boats often moor by the island at the two sides of the waterway to take shelter from the north wind.

Gongshi Reef - An exposed reef at the northeast end of the atoll, during the northeast monsoon period, the breaking waves on its northeast side are pronounced. When the weather is clear and there is no wind, this reef appears to be green and white in color, and it is easy to be sighted. There is a waterway between this reef and Beizi Island, but it is not easy to navigate.

Nailuo Reef **-** Located approximately 3.5 nautical miles southwest of Xizi Island, one part of it is exposed reef basin. During the southwest monsoon period, there are strong breaking waves on its southwest side. When the weather is clear, it appears as a green and white color, and it is easy to be sighted.

Lesi Submerged Shoal - Located approximately 13 nautical miles east-southeast of the Shuangzi reefs, it is an atoll resembling a pear shape. There is a lagoon in the center, the length from north to south is 8.1 nautical miles, the width of the northern part is approximately 6.1 nautical miles. Toward the south it tapers and has a width of approximately 2.7 nautical miles. On all sides there are many shoal patches with a water depth within 18.3 meters, and they are very steep.

Yongdeng Submerged Shoal - Located approximately two nautical miles north of the Lesi submerged shoal, its peripheral area is very steep and is formed of coral. There are many shoal patches with a water depth of less than 18.3 meters surrounding it on its periphery. In the center there is a lagoon with a relatively deep water depth.

Zhongye Reefs - Located approximately 18 nautical miles south of the Shuangzi Reefs, they are comprised of two coral shoals. The two shoals are separated by a 7-chain wide deep-water waterway. Zhongye Island is located at the eastern end of the western side reef basin and is 3.4 meters high. Tiezhi Reef is located at the northeast end of the eastern side reef basin. There are many dangerous reefs on the shoal.

Zhongye Island - Located at the eastern end of the Zhongye Reefs' western side reef basin, approximately 710 meters in length, approximately 570 meters in width, and with a surface area of 0.415 sq. km. The southwest end of the island has over 100 palm trees, it is approximately 5 meters ~ 7 meters high, and it can be sighted from seven nautical miles ~ eight nautical miles away. The rest is a growth of shrubs and weeds approximately 1.8 meters in length. Coral shoal extends on all sides of the island, and the shoal edge on the northeast side is approximately five chains away from shore.

The western side reef basin extends from Zhongye Island to the west approximately six nautical miles. Aside from some exposed reef on all sides of the shoal, it is all shallow shoals with irregular water depths. The Tiexiandong Reef lies approximately 1.5 nautical miles northwest of

Zhongye Island. The water depth between this reef and Zhongye Island is 4.5 meters ~ 14.6 meters. Approximately 1.3 nautical miles southwest of this coral reef lies Tiexianzhong Reef, and on top of it is a sandbar. The opening to the lagoon lies between these two reefs. Approximately two nautical miles southwest of Zhongye Island is an underwater reef.

The eastern side reef basin lies approximately 1.2 nautical miles east of Zhongye Island. It is comprised of a large group of reef and shoal patches. Its western end is located approximately seven chains east of reef extending from Zhongye Island. It expands approximately 4.5 nautical miles from the western end to the northeast direction. Tiezhi Reef lies at its eastern end.

Anchoring ground conditions: Ships without a large draft can drop their anchors at the sandbar on the northwest side of the western side reef basin's south side between the bearing 328° and 036°, where the water depth is greater than 7.3 meters. They can also anchor approximately one nautical mile southwest of Zhongye Island. The water depth there is 18.3 meters, and coral rock can be seen.

Qingbi Reef - Located at the northeast part of the Nansha Islands, it is approximately 12.5 nautical miles southwest of Zhongye Island. The atoll is continuous, there is no reef gateway, it is considered a closed and independent atoll. It has no particularly noticeable natural markers, it is submerged during high tide, and it is exposed during spring tide and low tide.

Xiyue Island - Located east of Zhongye Reefs, it is a solitary island in the middle of the reef, with a length of 720 meters, a width of 440 meters, and a surface area of approximately 0.21 sq. km. The island is around three meters high and is formed by sandy grounds. There are lush trees on the island, there are over 10 coconut trees with a height of 25 meters that can be seen from a distance of eight nautical miles ~ 10 nautical miles. The island is surrounded by a white sand cay. Outside the sand cay, there is a corral reef basin, on top of which there are boulders and a number of rocks. Exposed during low tide, the water is deeper on the outside of the reef basin. There is a submerged shoal, and the water depth on it is less than two meters. The reef extends two nautical miles toward the northern part of the island. According to fisherman responses, the island shore is located approximately 160 meters ~ 200 meters from the edge of the reef. All sides of the island have anchoring grounds that are available to general vessels to drop anchors. There is a small bay southeast of the island that can provide shelter from the northeast wind.

Long Shoal - Located approximately 27 nautical miles east of Zhongye Island, it is separated from the eastern edge of the Daoming Reefs by a deepwater waterway approximately 1.3 nautical miles in width, and it extends approximately 20 nautical miles to the northeast. It is a rock cay with a treacherous bottom, and Mengzi Reef is located at its northeast end.

Daoming Reefs - Located approximately 21 nautical miles southeast of the Zhongye Island, its southwest end is located approximately 20 nautical miles north of Taiping Island. The length from the southwest end of this reef to the northeast end is approximately 22 nautical miles. It is approximately seven nautical miles at its widest part. Because it is comprised of a lagoon that is surrounded by some submerged shoals, it is very steep. The water depth on the submerged shoal is very irregular. There is some reef on the south side of these reefs, including two on sandbars, which are respectively the Yangxin Sandbar and Shuanghuang Sandbar. Nanyao Island is located at the southernmost end of Daoming Reefs.

Nanyao Island - Located at the south end of Daoming Reefs and approximately 16 nautical miles north of Zhenghe Reefs. During low tide, the length of this island is approximately 470 meters, the width is 250 meters, the surface area is 0.087 sq. km, the height is approximately 2.5 meters, and it is the lowest-lying island of the Nansha Islands. This island is formed from sandstone. It is surrounded by reefs on all sides, and there are numerous trees growing on the island. Except for the north side, the reef extends approximately five chains toward the sea. In all other directions, the distance that it expands outward is relatively small.

Approximately two nautical miles east-northeast of the Nanyao Island, there is a coral reef that is partly exposed. Approximately two nautical miles west of Nanyao Island, there is a submerged shoal with a 5.4-meter water depth. Approximately five nautical miles northwest of the Nanyao Island, there are two reefs that trend toward the northeast and are separated by approximately one nautical mile. When Nandao Island is in sight at a bearing of 260°, approximately four chains from there can serve as anchoring grounds, and reef rock can be seen. At the southeast part of this island is a small bay, it is an anchoring ground to take shelter from the northeast wind, and fishing boats took shelter once here from level 7 ~ level 8 typhoons.

Yangxin Sandbank - Located approximately 6.5 nautical miles east-northeast of the Nanyao Island, it is located on a reef flat with a diameter of 9 chains. Approximately three nautical miles and four nautical miles northeast of this area is an exposed coral atoll.

Zhenghe Reefs - The main reef group of the Nansha Islands, it is located approximately 15 nautical miles northeast of Xiaoxian Reef. In its center is a big lagoon that is surrounded on all sides by shallow shoals with irregular water depths and some reef rock. The length from east to west is approximately 32 nautical miles, and the width from north to south is approximately 11 nautical miles at its maximum point. There are two islands and one sandbank on this reef group. The tree tops of these two islands can be sighted from the sea beyond a distance of 8 nautical miles ~ 11 nautical miles. Outside of the shallow shoals surrounding the lagoon, the water depth increases sharply. The water depth at the middle part of the lagoon is mostly 50 meters ~ 87 meters, but it is interspersed with over 10 coral reefs.

Zhenghe reef group waterways and waterway mid-stream conditions:

1. Approximately 7.5 nautical miles east of Taiping Island, the width is eight chains, and the dredging depth is 18 meters. The flood current flows 189° at a current speed of 1 knot. The ebb current flows 029° at a current speed of 0.8 knots.

2. 3.3 nautical miles east of Taiping Island, the width is 2.1 chains, the dredging depth is 10 meters. The flood current flows 160° at a current speed of 0.8 knots. The ebb current flows 017° with a current speed of 0.8 knots.

3. 1.5 nautical miles east of Taiping Island, the waterway width is 3.2 chains, and the dredging depth is 11.5 meters. The flood current flows 226° with a current speed of 0.5 knots. The ebb current flows 028° with a current speed of 0.8 knots.

4. East of the Taiping Island reef basin, the width is 2.1 chains, and the dredging depth is 18 meters.

5. North of the Hongma Island reef basin, the width is 3.2 chains, and the dredging depth is 18 meters. The flood current flows 314°, and the ebb current flows 175°, and the current speed of both is 1 knot.

6. West of Hongma Island reef basin, the width is 4.3 chains, and the dredging depth is 18 meters. The flood current flows 328° with a current speed of 0.8 knots. The ebb current flows 206° with a current speed of 1.3 knots.

7. Southwest of Taiping Island, the width is great than 5 chains, and the dredging depth is 18 meters. The flood current flows 245° with a current speed of 0.5 knots. The ebb current flows 130° with a current speed of 0.8 knots.

Taiping Island - Located at the northwest end of Zhenghe reef group, it is the largest island in the Nansha Islands. It is also the main island of the Zhenghe reef group. The island is named after the "Taiping Ship" of the Chinese Nationalist Party army that assumed control of the island in 1946. The length of the island from east to west is approximately 1.3 km, the width from north to south is approximately 0.41 km, the surface area is approximately 0.43 sq. km, and the altitude is 4.1 meters high.

This island is surrounded by coral reef, the eastern end extends 2.5 chains, and the western end extends 3.4 chains. The north and south sides of the island are fairly narrow. The narrowest section of the western part of the south side extends approximately 150 meters. A waterway approximately 200 meters in length and approximately five meters wide has been blasted through the southern reef basin. Large ships can only drop their anchors 500 meters away from the south shore (the water depth is around 30 meters, and it is a gravel bottom). Approximately two chains from the east side and northeast side of the island's eastern end and approximately 1.1 nautical miles west by south, there are shipwrecks exposed above the water.

Within approximately 1.6 nautical miles south of the Taiping Island reef's western end, the water depth is less than 10 meters. Approximately seven chains southwest of this island, there is a shoal patch with a water depth of 3.6 meters.

Approximately two nautical miles east of Taiping Island, there is a reef rock that is submerged during high tide. There is a submerged shoal with a water depth of 6.4 meters between this reef rock and the island. According to 1954 reports, the nearby water depth becomes shallower.

Dunqian Sandbank - Located 6.5 nautical miles east of Taiping Island, during low tide, the length is approximately 450 meters, the width is approximately 130 meters, and the surface area is 0.1 sq. km. It is 4.5 meters high, and there is no freshwater on the island. There is a shallow shoal between Taiping Island and the sandbank. There is a round-shaped coral reef on the shoal, its diameter is approximately seven chains, and it is submerged during high tide. The waterway between the sandbank and this reef is a good anchoring ground, and the water depth is 12.8 meters ~ 18 meters.

Bolan Reef - Located approximately six nautical miles east-northeast of the Dunqian Sandbank, it is one end of the coral reef. It is an underwater atoll and is very steep. On this reef there are many submerged shoals with a water depth of 3.5 meters ~ 8.5 meters.

Anda Reef - Located at the eastern end of the Zhenghe reef group, it is approximately 7 nautical miles southeast of the Bolan Reef. It is an underwater atoll. This atoll is approximately 4.5 nautical miles in length. Its northeast end is both narrow and steep. There are rocks and reefs that extend one nautical mile northeast. The water depth above it gradually increases to over 91.4 meters.

Hongma Island - Located at the south side of Zhenghe reef group and approximately 12 nautical miles south of Taiping Island, the island is 6.1 meters high and is the highest island of the Nansha Islands. It is approximately 685 meters in length, has a width of approximately 144 meters, and has a surface area of approximately 0.084 sq. km. Small trees grow out in all directions on the island. Coral reef extends out on all sides of this island. The coral reef extending toward the west is approximately 1.2 nautical miles from shore at its farthest point. In all other directions, it does not exceed 4 chains. Approximately 1 nautical mile northeast of this island, there is a shoal patch with a water depth of 4.4 meters. Approximately 2 nautical miles west-southwest of this island, there is a submerged shoal with a water depth of 10 meters.

Nanxun Reef - Located at the southwest end of the Zhenghe reef group, it is comprised of the north and south coral reefs. It appears to be trending from northwest-to-southeast. There is a reef in the southeast direction that is located approximately six nautical miles west of Hongma Island. During high tide, these reef rocks are all submerged by seawater.

Jiuzhang Reefs - Located approximately 25 nautical miles south of the Zhenghe reef group, it is an atoll that appears to be trending from northeast-to-southwest. In the center there is a shoal lagoon with a length of approximately 27 nautical miles and a width of approximately 7 nautical miles. It is surrounded by several waterways that allow entry into the lagoon. However, when there is inclement weather, this area is not suitable to be used as an anchoring ground.

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Jiuzhang reef group includes in total 20 individual reef flats. Among these, there are 2 islands (Jinghong Island, Ranqing Sandbank), and 18 reefs. In clockwise order starting from the western end of the reefs, they are Chigua Reef, Guihan Reef, Hua Reef, Jiyang Reef, Jinghong Reef, Nanmen Reef, Ximen Reef, Dongmen Reef, Anle Reef, Changxian Reef, Zhuquan Reef, Niu'e Reef, Ranqingdong Reef, Ranqing Sandbank, Longxia Reef, Bianshen Reef, Jiuzhang Unnamed Reef (to be named), Zhangxi Reef, Quyuan Reef, and Qiong Reef.

Chigua Reef - Located at the edge of the southwest end of the Jiuzhang reef group's large atoll, the reef flat is low-lying, it has no particularly obvious natural markers. During high tide, it is submerged. During low tide, it is exposed and has a shape resembling a horseshoe.

Dongmen Reef - A part of the Jiuzhang Reef group's compound atoll, it is located at the middle of the northern edge of the large atoll. It is considered a semi-enclosed atoll. The reef flat is relatively low and flat, it is submerged during high tide. During low tide, most of it is exposed.

Jinghong Island - Located at the northwest end of Jiuzhang reef group, it is fairly long from the northeast to southwest with a length of approximately 324 meters. It has a width of approximately 135 meters, the surface area is 0.033 sq. km, and it has a height of 3.6 meters. There are clusters of tropical bushes on the island. Near the reef edge of the island's southwest end, there is a sand beach that is exposed during low tide.

Yongshu Reef - Located at the southeast part of the Nansha Islands and the west end of the Nanhua waterway's south side, the reef is trending from northeast-to-southwest. Most of the atoll is submerged underwater. During high tide, only the western end has 2 sq. meters of natural reef rock exposed. During low tide, there are 7 pieces of reef flat of varying sizes that are exposed.

Fulusi Reef - Located approximately 17 nautical miles west-northwest of the northern end of Daxian Reef, it is an underwater reef rock that is trending from northeast to southwest. It is approximately 1.5 nautical miles in length and approximately 2.3 chains in width. There is a group of submerged reefs to the southwest of this reef's southwest end. In all other waters the water depth is 1.8 meters ~ 5.5 meters. The edge of this reef is very precipitous and very dangerous.

Daxian Reef - Located approximately 45 nautical miles east-northeast of the Yongshu Reef, most of this reef is exposed on the surface of the sea. In the center there is a lagoon, but there is no waterway or entry point. All the reef rocks are very steep.

Xiaoxian Reef - Located approximately 10 nautical miles east of Daxian Reef's southern end, it is a coral reef that is partially exposed on the surface of the sea when the tide recedes. All sides of the reef are very steep.

Yinqing Reefs - Located in the southeast sea area of the Nansha Islands, it is comprised of four reef rocks that include the West Reef, Middle Reef, East Reef, and Huayang Reef. It extends approximately 38 nautical miles east from West Reef. The reef edges of each reef are all very steep. The reef basins of several reef rocks do not connect with each other. When navigating near this reef, one must be especially careful. When the sun is directly in front of the reef, one may not approach the reef at that time because it is difficult to distinguish between shallow water and breaking waves.

Huayang Reef - Approximately 40 nautical miles slightly westerly of due north from the Yongshu Reef is the easternmost part of the Yinqing Reefs. It is an independent table-like reef with no lagoon in the center of the reef flat. It appears to be trending toward the east and west. During high tide it is submerged. During spring tide and low tide, it is exposed, and its middle part is low and flat.

East Reef - Located approximately 16 nautical miles east of the West Reef, there is a lagoon in the center with a water depth of 7.3 meters ~ 14.6 meters. There are huge breaking waves on the reef from time to time. On its western end, there are one to two rocks exposed above the sea surface, and the exposed part is 0.9 meters high. There is no way to navigate into the lagoon.

Middle Reef **-** It is a submerged coral reef, there is a lagoon in the center, and the water depth is 7.3 meters ~ 14.6 meters. There is a sand beach on the southwest end of Middle Reef, which is reportedly submerged by seawater during the spring tide. Unlike the West and East Reefs, Middle Reef often does not have any obvious breaking waves.

West Reef - It is the westernmost reef of the Yinqing Reefs. Its sides are surrounded by some exposed and scattered coral heads. On its eastern side there is a 0.6 meter high sandbank. At the middle part of the reef, the water depth is 11 meters ~ 18.3 meters, and there are several coral heads. One can only approach its middle part from the southeast direction. However, due to the presence of several isolated coral reefs, navigating the area is dangerous.

Nanwei Island - The island is located approximately 22.5 nautical miles southwest of the West Reef of the Yinqing Reef group. The island is flat and is blanketed by weeds. During low tide, the island is approximately 390 meters in length, the width is approximately 310 meters, the surface area is 0.171 sq. km., and the height is approximately 2 meters. There are water wells on the island, and the water quality is the best in Nansha. The coast is made up of white-colored coral sand and crushed coral. There is a cairn (rock pile) erected near the center of the island's northern part, and there is a flagpole erected near the center of the island. All sides of the island are surrounded by exposed rock ledges and coral heads. Within the scope of 0.5 nautical miles from the north side of the island, the water depth is less than 5.4 meters. There are many cliffs on the east side of the island, while there are more gradual slopes on the west side.

The shoals to the northeast and southwest of this island can all be used for anchoring. Even during the northeast monsoon, the northeast anchoring ground is still fairly good because the seabed slopes here are very gradual. However, it is not advised for ships to enter waters with water depths of less than 18 meters because the seabed in those places has wide variations up and down.

The tide near this island is a diurnal tide. The greatest tidal range in the summer season is 1.6 meters. The flood current is a southwest current, and the ebb current is a northeast current.

Riji Reef - Located approximately 15 nautical miles west of Nanwei Island, it is made up of a lagoon surrounded by an atoll with a white sand bottom. During low tide, the reef rock is partially exposed above the sea surface. There is almost no way for ships to cross the reef rock to enter the lagoon. After the tide recedes, the northeast, northwest, and southeast directions of the exposed long coral atoll respectively have shipwrecks.

Nanwei Bank - Located approximately 57 nautical miles south by west of Nanwei Island, it is an elliptical-shaped underwater shoal made up of sand and coral. Its length from north to south is approximately 30 nautical miles, its width from east to west is approximately 14.1 nautical miles. The surrounding area is relatively shallow at approximately 7.3 meters. The main ones distributed here are the Pengbo Bao, Ao'nan Submerged Shoal, Jindun Submerged Shoal, and Changjun Submerged Shoal. The center is very deep, and the water depth is between 22 meters ~ 82 meters. Except for when the weather is very calm, this shoal usually has breaking waves.

Pengbo Bao is located at the northeast end of Nanwei Bank. On it the minimum water depth is 3 meters, and it is the shallowest part of Nanwei Bank.

Jindun Submerged Shoal is located at the southern part of Nanwei Bank. On it, the minimum water depth is 10.9 meters.

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Changjun Submerged Shoal is located at the western part of Nanwei Bank. On it, the minimum water depth is 7.3 meters.

Guangya Bank - Located approximately 70 nautical miles west-northwest of Nanwei Bank, it has a length of approximately 14 nautical miles, a width of approximately 7 nautical miles, and it is all made up of coral reef. On it, the water depth is very irregular. The water depth on its western side is only 7.3 meters. On it, there are also many small reef basins with a water depth of 14.6 meters ~ 18.3 meters.

Renjun Bank - Located approximately two nautical miles southeast of Guangya Bank, it is an underwater reef flat that appears to be trending toward the north and south, has a length of approximately 6 nautical miles, and has a width of approximately 4 nautical miles. The coral bottom of the entire bank is clearly visible. The water depth on its eastern side is only 5.5 meters.

Lizhun Bank - Located approximately 14 nautical miles south by west of Renjun Bank, it is an underwater reef flat formed by coral. It has a length of approximately 5 nautical miles, it has a length of approximately 2 nautical miles, and on it, the water depth is 10.9 meters ~ 14.6 meters. Almost all of the coral bank is visible.

Xiwei Bank - Located approximately 28 nautical miles west by north of Lizhun Bank, it is an underwater shoal formed by sand and coral that is approximately 16.2 nautical miles in length and approximately 9 nautical miles in width. The minimum water depth near its northwest side is 18.2 meters.

Wan'an Bank - It is a crescent-shaped reef basin with a length of approximately of 34 nautical miles and an average width of approximately 6 nautical miles. The minimum water depth of this bank is 16.4 meters. It is located 60 nautical miles southeast of the navigational route that goes from Hong Kong to Singapore. Its southern end is located 173 nautical miles north-northeast of the North Natuna Islands.

Liyue Bank - It is the largest underwater shoal among the Nansha Islands. Located at the northeast end of the Nansha Islands, it is an irregular shoal, and it only has partially exposed reefs and submerged reefs at the southwest end and northeast end. This bank's maximum length from northeast to southwest is approximately 97 nautical miles, and its maximum width is approximately 66 nautical miles. The north end is Xiongnan Reef with a water depth of 18.2 meters. The southeast end is Yangming Reef, which is an exposed reef. The southwest end is Houteng Reef, which is a group of submerged reefs. The west side is Dayuan Reef. It is a shoal that is trending from northeast to southwest and is shallower than 30 meters.

Nanfang Shoal - Located to the south of Liyue Bank, the reef edges of the two banks are only about 4 nautical miles apart. It is an underwater reef basin that is trending northeast-to-southwest, has a length of approximately 40 nautical miles, and is approximately 15 nautical miles at its widest point. On it are many shoals shallower than 20 meters and submerged reefs. On the north end there is a shoal with a water depth of 7.5 meters. The east end is Bin Reef, which is an underwater submerged reef basin. Southwest of this reef is a shoal that is shallower than 5.4 meters.

There are many submerged shoals and shallow shoals on the east side of the Liyue Bank and Nanfang Shoal, including Zhongxiao Bank, Yongshi Bank, Shenxian Submerged Shoal, Haima Bank, Xianhou Bank, and Zong Bank.

Feixin Island - Located approximately 6 nautical miles north by east of Mahuan Island, it is a small sandbank that is slightly long and eggplant-shaped. It appears to be trending northeast-to-southwest, has a length of approximately 350 meters, has a width of approximately 221 meters, has a surface area of approximately 0.047 sq. km, and the island is 2.2 meters high. Based on what fishermen have said, this island is not suitable for people to live on. The island is surrounded on all sides by reef rock. No trees grow on the island, and the freshwater is not suitable for drinking. There is also a small island to the northeast of this island. 2 nautical miles northeast and southeast of the coral reef, the water depth is 45 meters, and ships can be anchored here.

Mahuan Island - Located approximately 6.5 nautical miles north of the northeast end of Wufang Reef, it is on the middle part of an exposed coral reef. It is on the same underwater shoal as Feixin Island. This island is very long from east to west. During low tide, its length is approximately 430 meters, its width is 290 meters, and its surface area is approximately 0.074 sq. km. The island is 2.4 meters high. Besides coconut trees growing on the island, there are no other trees. There are weeds growing there over a feet long, and vegetables can be planted. There is a water well in the center part of the island, the quality of the water is fairly good, and it is drinkable. In the past, fishermen from China's Hainan Island had once lived on the island and cultivated it.

Wufang Reef - Located approximately 15 nautical miles south by west of the Mahuan Island, it is a slightly circular-shaped atoll. Most of it is underwater, and some of it is exposed. The water depth within the lagoon is 13 meters ~ 47.6 meters. The sandy and coral bottoms are anchoring grounds that provide a good anchor grip. However, when there is bad weather, it cannot provide shelter from the wind. There are mainly four locations for entering and exiting the lagoon, which are respectively called the Northwest Entrance, the North Entrance, the Northeast Entrance, and the East Entrance. There are two waterways south of the lagoon with water depths exceeding 18.3 meters, but they are very narrow and they are not suitable for navigation.

Lusha Reef and Sanjiao Reef are respectively located approximately 27 nautical miles and 33 nautical miles southwest of the Wufang Reef. They are both exposed coral reefs.

Meiji Reef - Located at the northeast part of the Nansha Islands, it is due east of the Jiuzhang Reefs, and it is approximately 62 nautical miles from Dongmen Reef. The reef resembles an elliptical shape, and it is an enclosed, independent atoll. The reef flat is exposed during low tide and is submerged during high tide. The northern part is relatively wide, and the southern part is relatively narrow. There are dozens of reef rocks on the reef flat that range in height from 0.6 meters ~ 1.3 meters. During half-tide, they can be exposed. The southwest part has three openings to enter the lagoon. The water depth of the lagoon is 10 meters ~ 28 meters, and there are over 50 points of exposed reef flat scattered throughout. To develop the distant-sea fishing industry, in 1994, China’s fishing authorities constructed stilt houses and navigational aid facilities on this reef, set up administrative offices, and created the conditions for distant-sea operations, fishing vessel safety and production, supply, wind protection, and mooring.

Anchoring grounds and the safe anchoring zone within the Meiji Reef are located at the southwest part of the lagoon. In the water areas within the joint line connecting the following five points, the water depth is greater than 10 meters, and the area can provide shelter against level 10 strong winds:

(1) 9°53’.1N, 115°30’.6E;
(2) 9°53’.1N, 115°31’.6E;
(3) 9°54’.2N, 115°31’.5E;
(4) 9°55’.0N, 115°30’.5E;
(5) 9°53’.6N, 115°30’.2E.

[…]

暗沙、中南暗沙、一统暗沙和神狐暗沙。

黄岩岛（民主礁） 位于永兴岛偏南 340 海里处，为群岛中唯一露出海面的环礁，形似等腰三角形，西边与南边各长 15 千米，面积约 150 平方千米。礁盘顶宽 1 千米～2 千米，北部最宽达 3.3 千米，一般水深 0.5 米～3.5 米，顶面分布有数百个大礁块，高出海面 0.3 米～3.5 米。西北端的北岩和东南端的南岩，面积各约 10 平方米，分别高出海面 1.5 米和 1.8 米。礁湖内水深 10 米～20 米，南岩东侧有一宽 400 米的通道，小船可由外海入内锚泊。

宪法暗沙 位于黄岩岛西北 150 千米，呈长 20 千米、宽 11 千米椭圆形，最浅处水深 18 米。

中南暗沙 位于黄岩岛西南 290 千米，最浅处水深 272 米，与宪法暗沙皆耸起于中央海盆。

一统暗沙和神狐暗沙 位于东沙群岛与西沙群岛之间，发育在北部大陆坡上段，最浅处水深分别为 10.2 米和 10.8 米。

第三节 南沙群岛

海 图 104 10018 10019 10020 10021 17030 18050

概况

南沙群岛，原名团沙群岛，位于北纬 03°37′～11°55′，东经 109°43′～117°47′之间，南北宽约 550 海里，东西长约 650 海里。北靠西沙群岛，南近加里曼丹岛，东邻菲律宾，西望中南半岛。其中太平岛北距三亚港 550 海里，东距马尼拉港 187 海里，西南距新加坡 830 海里，西距胡志明港 186 海里，该群岛位于南海航路的要冲，是船舶的油、水补给点和在航船舶的临时锚泊点。南沙群岛是中国南海诸岛中位置最南、分布最广、范围最大、包括的岛屿最多的一个群岛。

南沙群岛的岛礁和暗沙，大部分由珊瑚构成，并且多为环抱着礁湖的环礁。在岛屿和环礁的外侧，一般均甚陡峭，水深急增。南沙群岛大约有岛屿、沙洲、暗礁、暗滩和暗沙共 550 多个，其中高潮时露出水面的岛、洲、礁 36 个（岛屿及沙洲 16 个、礁 20 个），其中较大的岛屿 13 个，有太平岛、中业岛、南威岛、西月岛、北子岛、南子岛、鸿庥岛、南钥岛、安波沙洲、敦谦沙洲、马欢岛、景宏岛、费信岛。在这 13 个较大的岛屿中，太平岛最大，面积为 0.43 平方千米，其余岛屿总面积只有 1.6 平方千米；鸿庥岛最高，仅为 6.1 米。

南沙群岛依其岛礁分布情况，可大至分为东、西、南三群。东群只有几个零星礁滩，南群全是暗礁、暗沙，唯有西群岛礁密布。西群的岛礁又可以北纬 09°为界，分为东北和西南两部分。东北部分岛礁最多，包括双子、中业、道明、郑和、九章 5 个群礁及一些零星岛、礁，为南沙群岛海区岛、礁分布最密集的区域。

在南沙群岛的中部和东部区域，暗礁和险滩星罗棋布，海底地貌十分复杂。

低岛是南沙群岛岛屿的主要特征，所有岛屿海拔 3 米～4 米，一般有土壤植被，间或有礁石耸立，岛周围有坡度不大的白色沙滨环绕。

气象水文

风 有明显的季风特征，季风期明显，5 月—9 月为西南季风期，11 月至次年 3 月为东北季风期，4 月和 10 月为季风转换期。如无台风活动，4、5 月是风力最小的时期，一般在 2 级～3 级左右。4 月最多风向为东北，5 月多东风。6 月以后西南风向较为稳定，平均风力增加，以 4 级～5 级风出现机会最多（占 50%），2 级～3 级风次之（占 34%）。10 月渐转为东北风，风力较小，以 2 级～3 级出现的机会最多（占 48%），4 级～5 级次之（占 39%）。11 月至次年 1 月东北季风稳定，以 4 级～5 级为主，有时可达 6 级～7 级，最大风速曾达 35 米/秒，这多半是由台风和强冷空气共同影响而造成的。2 月—3 月冷空气减弱，4 级～5 级风虽经常出现，但 2 级～3 级风出现的机会增多。据渔民反映：6 月—8 月常出现暴风骤雨，风力很大，每当西南方有一块浓密的乌云出现时，就意味

达反射器，作用距离 15 海里，由新加波去香港、马尼拉的商船也多在此分路。此岛是海鸟的繁殖地，有许多鸟粪，曾被大量开采。

南子岛和北子岛之间相距约 1.5 海里，水面宽约 9.4 链，中间为一水道，可通航一般船舶。渔船常在该水道两侧靠岛避东北风。

贡士礁 为环礁东北端的干出礁，在东北季风期，它的东北侧浪花显著。晴朗无风天气时，该礁显绿白色，易于发现。它和北子岛之间有一水道，但不易通航。

奈罗礁 位于南子岛西南方约 3.5 海里处，为一部分干出的礁盘。在西南季风期，它的西南侧有猛烈的浪花。晴朗天气时，呈绿白色，易于发现。

乐斯暗沙 位于双子群礁的东东南方约 13 海里处，是一近似梨形的环礁，中间是一礁湖，南北长约 8.1 海里，北部宽约 6.1 海里，往南渐狭，宽约 2.7 海里。四周有许多水深在 18.3 米以内的点滩，很陡峭。

永登暗沙 位于乐斯暗沙的北方约 2 海里处，周围陡深，由珊瑚构成，有许多水深小于 18.3 米的点滩围绕在它的周围，中间有一水深较深的礁湖。

中业群礁 在双子群礁南方约 18 海里处，由两个珊瑚滩组成。两滩之间隔着一条宽约 7 链的深水水道。中业岛位于西侧礁盘东端，高 3.4 米。铁峙礁位于东侧礁盘的东北端。滩上有许多险礁。

中业岛 位于中业群礁的西侧礁盘的东端，长约 710 米，宽约 570 米，面积约 0.415 平方千米。岛上西南端有棕榈树 100 余棵，高约 5 米～7 米，相距 7 海里～8 海里可发现，其余均生长高约 1.8 米的灌木和杂草。该岛四周有珊瑚滩延伸，东北侧的滩缘距岸约 5 链。

西侧礁盘自中业岛向西方扩延约 6 海里，该滩四周除有一些干出礁外，均为水深不规则的浅滩。中业岛西北约 1.5 海里处有铁线东礁，该礁与中业岛之间水深为 4.5 米～14.6 米。该珊瑚礁的西南方约 1.3 海里处，有铁线中礁，其上有一沙洲。该两礁之间为礁湖的入口。在中业岛西南方约 2 海里处有一水下礁石。

东侧礁盘在中业岛东方约 1.2 海里处，由一大群礁石和点滩构成，它的西端位于从中业岛伸出的礁石东方约 7 链。并从西端向东北方扩延约 4.5 海里，其东端为铁峙礁。

锚地情况：吃水不大的船舶可在西侧礁盘的南侧视该滩的西北侧的沙洲方位 328°和 036°之间，水深 7.3 米以上处锚泊。还可以在中业岛的西南方约 1 海里处锚泊，该处水深为 18.3 米，并可见到礁石。

渚碧礁 位于南沙群岛的东北部，在中业岛西南方约 12.5 海里处，环礁连续，无礁门，属封闭型独立环礁，没有特别明显的天然目标，高潮时淹没，大潮低潮时露出。

西月岛 位于中业群礁以东，是在礁石中央的一个孤岛，长 720 米，宽 440 米，面积约 0.21 平方千米，岛高 3 米左右，由沙地构成。岛上树木茂盛，有椰树 10 余棵，高达 25 米，相距 8 海里～10 海里即可发现。岛周围为白色沙滨，沙滨之外为珊瑚礁盘，其上有巨石数块，低潮时干出，礁盘外侧水较深。有一暗礁，其上水深不及 2 米，礁脉向岛的北部延伸 2 海里。据渔民反映，岛岸距礁缘 160 米～200 米左右，外侧水深突增。岛的四周有可供一般船舶锚泊的锚地。岛东南有一小湾，可避东北风。

长滩 位于中业岛东方约 27 海里处，与道明群礁的东北缘隔一宽约 1.3 海里的深水航道，并向东北扩延约 20 海里，为一底质险恶的岩礁脉，蒙自礁位于其东北端。

道明群礁 位于中业岛东南方约 21 海里处，它的西南端位于太平岛的北方约 20 海里。该群礁的西南端至东北端长约 22 海里，最宽处约 7 海里，由一个被一些暗沙围绕着的礁湖组成，很陡峭。暗沙上的水深很不规则。在群礁的南侧有一些礁石，其中两个上有沙洲，分别为杨信沙洲和双黄沙洲；南钥岛位于道明群礁的最南端。

南钥岛 位于道明群礁的南端、郑和群礁的北方约 16 海里。该岛低潮时长约 470 米，宽 250 米，面积 0.087 平方千米，高约 2.5 米，是南沙群岛中最低的一个岛。该岛由沙岩构成，四周岩礁环绕，岛上小树丛生。除在北侧，礁石向海伸出约 5 链外，其他方向向外扩延的距离都较小。

在南钥岛的东东北方约 2 海里处，有一部分干出的珊瑚礁。在南钥岛的西方约 2 海里处，有一水深为 5.4 米的暗沙。在南钥岛的西北方约 5 海里处，有两个成东北走向的礁石，其间相隔约 1 海里。在视南钥岛方位 260°、距离约 4 链处可作锚地，并可看见礁石。在该岛的东

南部有一小湾，为避东北风的锚地，渔船曾在该处避过一次7级～8级台风。

杨信沙洲 位于南钥岛东东北方约6.5海里处，座落于直径为9链的礁滩上。在其东北方3海里和4海里处各有一个干出的珊瑚礁。

郑和群礁 是南沙群岛的主要群礁，位于小现礁的东北方约15海里处。其中央为一大礁湖，四周环绕着深度不规则的浅滩和一些礁石，东西长约32海里，南北宽度最大约11海里，在该群礁上有两个岛和一个沙洲，两岛的树顶在8海里～11海里以外的海上即可发现。礁湖周围浅滩的外侧深度急剧增加，礁湖中部的深度大部分为50米～87米，但其间散布着10多个珊瑚礁。

郑和群礁中的水道及水道中流的情况：

1. 在太平岛以东7.5海里处，宽8链，疏浚深度18米。涨潮流流向189°，流速1节；落潮流流向029°，流速0.8节。

2. 太平岛以东3.3海里，宽2.1链，疏浚深度10米。涨潮流流向160°，流速0.8节；落潮流流向017°，流速0.8节。

3. 太平岛以东1.5海里，水道宽3.2链，疏浚深度11.5米；涨潮流流向226°，流速0.5节；落潮流流向028°，流速0.8节。

4. 太平岛礁盘以东，宽2.1链，疏浚深度18米。

5. 鸿庥岛礁盘以北，宽3.2链，疏浚深度18米；涨潮流流向314°，落潮流流向175°，流速均为1节。

6. 鸿庥岛礁盘以西，宽4.3链，疏浚深度18米；涨潮流流向328°，流速0.8节；落潮流流向206°，流速1.3节。

7. 太平岛西南，宽度大于5链，疏浚深度18米；涨潮流流向245°，流速0.5节；落潮流流向130°，流速0.8节。

太平岛 位于郑和群礁的西北端，是南沙群岛中最大的岛屿，也是郑和群礁的主岛，是以1946年中国国民党军接管该岛的“太平舰”命名的。岛的东西长约1.3千米，南北宽约0.41千米，面积约0.43平方千米，海拔高度为4.1米。

该岛周围被珊瑚礁所环绕，东端延伸2.5链，西端延伸3.4链；岛南北两侧较狭，南侧西部最狭处延伸150米，南部礁盘上已炸出一长约200米，宽5米左右的航道。大船只能在距南岸500米处抛锚（水深30米左右，碎石底）。该岛的东端的东方、东北方各约2链及西偏南方约1.1海里处各有一露出水面的沉船。

太平岛礁脉西端往南约1.6海里内，水深不及10米。该岛的西南方约7链处有一水深为3.6米的点滩。

在太平岛的东方约2海里处，有一在高潮时被淹没的礁石。这一礁石和岛屿之间有一水深为6.4米的暗沙。据1954年报，附近水深变浅。

敦谦沙洲 位于太平岛东方6.5海里处，低潮时长约450米，宽约130米，面积0.1平方千米。高约4.5米，岛上无淡水。太平岛与沙洲之间有一浅滩，滩中有一圆形珊瑚礁，其直径约7链，高潮时被淹没。沙洲与该礁间的水道，为一良好的锚地，水深12.8米～18米。

舶兰礁 位于敦谦沙洲的东东北方约6海里处，是一珊瑚礁脉的末瑞，为一水下环礁，很陡峭。在这个礁脉上有多个水深为3.5米～8.5米的暗沙。

安达礁 位于郑和群礁的东端，在舶兰礁的东南方约7海里处，为一水下环礁。该环礁长约4.5海里，其东北端既狭窄又陡峭，并有岩石礁脉向东北方延伸1海里，其上水深逐渐增大到91.4米以上。

鸿庥岛 位于郑和群礁的南侧、太平岛的南方约12海里处，岛高6.1米，为南沙群岛中最高的岛，长约685米，宽约144米，面积约0.084平方千米，岛上遍生小树。该岛四周有珊瑚礁延伸，向西延伸的珊瑚礁距岸最远约1.2海里，其余方向不超过4链。在该岛的东北方约1海里处，有一水深为4.4米的点滩，在该岛的西西南方约2海里处，有一水深为10米的暗沙。

南薰礁 位于郑和群礁的西南端，由南、北两个珊瑚礁组成，呈西北—东南走向。其中东南方的一个礁位于鸿庥岛的西方约6海里处。这些礁石在高潮时，全部被海水淹没。

九章群礁 位于郑和群礁的南方约25海里处，为一呈东北—西南走向的环礁，中间为一长约27海里，宽约7海里的浅滩泻湖，周围有多条通道可进入泻湖，但在天气恶劣时，此区域不宜作为锚地。

九章群礁共包括20个个体礁坪，其中有岛屿2个（景宏岛、染青沙洲）、礁18个。由群

礁的西端起依顺时针次序，依次为赤瓜礁、鬼喊礁、华礁、吉阳礁、景宏岛、南门礁、西门礁、东门礁、安乐礁、长线礁、主权礁、牛轭礁、染青东礁、染青沙洲、龙虾礁、扁参礁、九章无名礁（待命名）、漳溪礁、屈原礁和琼礁。

赤瓜礁　处九章群礁大环礁西南端边缘，礁坪低平，没有特别明显的天然目标，高潮时淹没，低潮时露出，形似马蹄。

东门礁　为九章群礁复合环礁的一部分，座落在大环礁的北部边缘中间，属半封闭型环礁，礁坪较平坦，高潮时被水淹没，低潮时大部分露出。

景宏岛　位于九章群礁的西北端，从东北至西南较长，约 324 米，宽约 135 米，面积 0.033 平方千米，高 3.6 米。岛上丛生热带灌木。靠近该岛的西南端的礁缘上有一低潮时露出的沙滩。

永暑礁　位于南沙群岛的东南部、南华水道南侧西端，礁体东北至西南走向。环礁大部分沉溺于水下，高潮时仅西端有一 2 平方米的天然礁石露出；低潮时，有 7 块大小不等的礁坪露出。

福禄寺礁　位于大现礁北端的西西北方约 17 海里处，为一东北—西南走向的水下礁石，长约 1.5 海里，宽约 2.3 链。在该礁西南端的西南方有一群适淹礁，其他水域的水深为 1.8 米～5.5 米。该礁礁缘十分陡峭，很危险。

大现礁　位于永暑礁的东东北方约 45 海里处，该礁大部分干出海面。其中央有一礁湖，但无通道可入。礁石都十分陡峭。

小现礁　位于大现礁南端的东方约 10 海里处，是退潮时部分露出海面的珊瑚礁，礁的四周陡峭。

尹庆群礁　位于南沙群岛的东南海域，由西礁、中礁、东礁、华阳礁四个礁石组成，从西礁向东延伸约 38 海里，各礁的礁缘都很陡峭，几个礁石的礁盘互不相连。在该礁附近航行时，要特别小心。当太阳在它的前方时，不可向它接近，因为此时难于识别出浅水或浪花。

华阳礁　在永暑礁正南方略偏西约 40 海里处，在尹庆群礁最东部，是一个独立的、礁坪中部没有泻湖的台状礁体，呈东西向。高潮时淹没，大潮低潮时露出，中部低平。

东礁　位于西礁东方约 16 海里，中间有一礁湖，水深 7.3 米～14.6 米。礁上时有巨大浪花。在它的西端有一、二个干出海面的岩石，干出高度 0.9 米。无通道可以进入礁湖。

中礁　是一个适淹的珊瑚礁，中间有一礁湖，水深 7.3 米～14.6 米。在中礁的西南端有一沙滩，据说，在大潮时会被海水淹没。同西、东礁不同，中礁经常没有明显的浪花。

西礁　是尹庆群礁最西边的一个礁，其周围环绕着一些干出的分散的珊瑚头，在它的东边有一高 0.6 米的沙洲，在礁的中央部分水深 11 米～18.3 米，并有几个珊瑚头。只有从东南方向才可以向它的中央部分接近，但由于许多孤立的珊瑚礁存在，所以航行是危险的。

南威岛　位于尹庆群礁的西礁的西南方约 22.5 海里处。岛面平坦，覆盖杂草。低潮时岛长约 390 米，宽约 310 米，面积 0.171 平方千米，高约 2 米。岛上有水井，水质为南沙最佳。沿岸为白色的珊瑚沙及碎珊瑚。一个堆石标立在该岛北部中心附近，一旗杆立在岛的中心附近。岛的四周围绕着干出的岩架和珊瑚头，岛的北面 0.5 海里范围内水深小于 5.4 米，岛的东面是峭壁陡岩，西面坡度较小些。

该岛的东北方或西南方的浅滩上均可锚泊。即使在东北季风时，东北方的锚地还是较好的，因为该处海底的坡度较小；但船舶不宜进入水深小于 18 米的水域，因为那里海底起伏变化甚大。

该岛附近潮汐属日潮，夏季潮差最大约 1.6 米；涨潮为西南流，落潮为东北流。

日积礁　位于南威岛的西方约 15 海里，由珊瑚环礁围成的礁湖所构成，底质是白沙。在低潮时，礁石部分干出海面，船舶几乎无法越过礁石进入礁湖。在退潮后露出的长形珊瑚环礁的东北、西北及东南方分别有沉船。

南薇滩　位于南威岛南偏西方约 57 海里，是由沙和珊瑚构成的椭圆形水下浅滩，南北长约 30 海里，东西宽约 14.4 海里。周围较浅，约 7.3 米，主要分布有蓬勃堡、奥南暗沙、金盾暗沙和常骏暗沙等；中间较深，水深在 22 米～82 米之间。除了极平静的天气外，这一浅滩一般都有浪花。

蓬勃堡位于南薇滩的东北端，其上最小水深 3 米，是南薇滩的最浅部分。

金盾暗沙位于南薇滩的南部，其上最小水深 10.9 米

常骏暗沙位于南薇滩的西部，其上最小水深7.3米

广雅滩 位于南薇滩的西西北方约70海里处，长约14海里，宽约7海里，全部由珊瑚礁构成，其上水深极不规则，其西侧水深仅7.3米。其上还有许多水深在14.6米～18.3米的小礁盘。

人骏滩 位于广雅滩的东南方约2海处，呈南北走向、长约6海里、宽约4海里的水下礁滩，全滩的珊瑚底部皆清晰可见，其东侧水深仅5.5米。

李准滩 位于人骏滩的南偏西方约14海里处，是由珊瑚构成的水下礁滩，长约5海里，宽约2海里，其上水深10.9米～14.6米，珊瑚滩几乎全部可见。

西卫滩 位于李准滩的西偏北方约28海里处，是由沙和珊瑚构成的南北长约16.2海里、宽约9海里的水下浅滩。在它的西北侧附近最小水深为18.2米。

万安滩 为一新月形的礁盘，长约34海里，平均宽约6海里，该滩最小水深为16.4米，位于香港至新加坡航线的东南方60海里处。它的南端位于北纳土纳群岛的北东北方173海里。

礼乐滩 是南沙群岛中范围最大的一个水下浅滩，位于南沙群岛的东北端，为一不规则的浅滩，只有在西南端和东南端有部分干出礁和暗礁。该浅滩东北—西南最长约97海里，最宽约66海里。北端为雄南礁，水深18.2米；东南端为阳明礁，为一干出礁；西南端为鲎藤礁，是一片暗礁群；西侧为大渊滩。是一东北—西南走向的浅于30米的浅滩。

南方浅滩 位于礼乐滩的南方，两滩礁缘相距仅约4海里，为一东北—西南走向的水下礁盘，长约40海里，最宽处约15海里。其上有许多浅于20米的浅滩、暗礁。北端有一水深7.5米的浅滩；东端为彬礁，是一水下暗礁盘，在该礁的西南方有一浅于5.4的浅滩。

在礼乐滩和南方浅滩的东侧有许多暗沙、浅滩，其中有忠孝滩、勇士滩、神仙暗沙、海马滩、仙后滩、棕滩等。

费信岛 位于马欢岛的北偏东方约6海里处，为一略呈长茄状的小沙洲，呈东北—西南走向，长约350米，宽约221米，面积约0.047平方千米，岛高2.2米。据渔民称，该岛不宜住人。岛的四周礁石环绕。岛上不长树木，淡水不能饮用。在该岛的东北方还有一小洲。在珊瑚礁的东北、东南各2海里处，水深45米，可锚泊船舶。

马欢岛 位于五方礁东北端的北方约6.5海里处，在一干出的珊瑚礁中部，与费信岛在同一水下浅滩上。该岛东西较长，低潮时长约430米，宽290米，面积约0.074平方千米。岛高2.4米。岛上除椰树外，别无其他树木，长有尺余长的杂草，可种蔬菜。岛的中部有一水井，水质较佳，可饮用。中国海南岛渔民过去曾在岛上居住，并进行垦殖。

五方礁 位于马欢岛的南偏西方约15海里处，为一略呈圆形的环礁，大部分在水下，有部分干出。该礁直径约8海里，环礁上有5个干出礁。礁湖内水深13米～47.6米，在底质为沙和珊瑚处均可获得锚抓力良好的锚地，但坏天气时，不能避风。进出礁湖的主要出入口有4个，分别称为西北入口、北入口、东北入口和东入口。在泻湖的南方有两个水深超过18.3米的航道，但很窄，不宜航行。

禄沙礁和三角礁分别位于五方礁的西南方约27海里和33海里处，均为干出的珊瑚礁。

美济礁 位于南沙群岛东北部，在九章群礁的正东方，距东门礁约62海里。礁体近似椭圆形，是一个封闭型独立环礁，礁坪低潮时露出，高潮时淹没，北部较宽，南部较窄。礁坪上有数十块高0.6米～1.3米的礁石，半潮时可露出，西南部有3个进出泻湖的口门。泻湖水深10米～28米，有50多处干出礁坪散落其中。为发展远海捕捞事业，1994年中国渔政部门在该礁建立了高脚屋、助航标志等设施，设置了办事机构，给远海作业渔船安全生产、补给、防风、锚泊创造了条件。

锚地，美济礁内安全的锚泊区位于泻湖的西南部，在以下列五点连线水域内，水深大于10米，可避10级强风。

(1) 9°53′.1N、115°30′.6E；

(2) 9°53′.1N、115°31′.6E；

(3) 9°54′.2N、115°31′.5E；

(4) 9°55′.0N、115°30′.5E；

(5) 9°53′.6N、115°30′.2E。

仁爱礁 位于信义礁的北偏西约25海里处，为一干出的珊瑚环礁，南北走向，长约10海里，北宽南窄。环礁的北半部连在一起，南

Annex 233

United States National Geospatial-Intelligence Agency, *Pub. 161 Sailing Directions (Enroute), South China Sea and the Gulf of Thailand* (13th ed., 2011)

PUB. 161

SAILING DIRECTIONS (ENROUTE)

★

SOUTH CHINA SEA AND THE GULF OF THAILAND

★

Prepared and published by the
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY
Bethesda, Maryland

2011

THIRTEENTH EDITION

Preface

Pub. 161, Sailing Directions (Enroute) South China Sea and the Gulf of Thailand, Thirteenth Edition, 2011, is issued for use in conjunction with Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia. Companion volumes are Pubs. 162, 163, and 164.

Digital Nautical Charts 3, 11 and 23 provide electronic chart coverage for the area covered by this publication.

This publication has been corrected to 05 February 2011, including Notice to Mariners No. 6 of 2011.

Explanatory Remarks

Sailing Directions are published by the National Geospatial-Intelligence Agency (NGA), under the authority of Department of Defense Directive 5105.40, dated 12 December 1988, and pursuant to the authority contained in U. S. Code Title 10, Sections 2791 and 2792 and Title 44, Section 1336. Sailing Directions, covering the harbors, coasts, and waters of the world, provide information that cannot be shown graphically on nautical charts and is not readily available elsewhere.

Sailing Directions (Enroute) include detailed coastal and port approach information which supplements the largest scale chart produced by the National Geospatial-Intelligence Agency. This publication is divided into geographic areas called "Sectors."

Bearings.—Bearings are true, and are expressed in degrees from 000° (north) to 360°, measured clockwise. General bearings are expressed by initial letters of points of the compass (e.g. N, NNE, NE, etc.). Adjective and adverb endings have been discarded. Wherever precise bearings are intended degrees are used.

Charts.—Reference to charts made throughout this publication refer to both the paper chart and the Digital Nautical Chart (DNC).

Coastal Features.—It is assumed that the majority of ships have radar. Available coastal descriptions and views, useful for radar and visual piloting are included in geographic sequence in each Sector.

Corrective Information.—Users should refer corrections, additions, and comments to NGA's Maritime Operations Desk, as follows:

1. Toll free: 1-800-362-6289
2. Commercial: 301-227-3147
3. DSN: 287-3147
4. DNC web site: http://msi.nga.mil/NGAPortal/DNC.portal
5. Maritime Domain web site: http://msi.nga.mil/NGAPortal/MSI.portal
6. E-mail: navsafety@nga.mil
7. Mailing address: Maritime Domain
National Geospatial-Intelligence Agency
Mail Stop D-44
4600 Sangamore Road
Bethesda MD 20816-5003

New editions of Sailing Directions are corrected through the date of the publication shown above. Important information to amend material in the publication is available as a Publication Digital Update (PDU) from the NGA Maritime Domain website.

NGA Maritime Domain Website
http://msi.nga.mil/NGAPortal/MSI.portal

Courses.—Courses are true, and are expressed in the same manner as bearings. The directives "steer" and "make good" a course mean, without exception, to proceed from a point of origin along a track having the identical meridianal angle as the designated course. Vessels following the directives must allow for every influence tending to cause deviation from such track, and navigate so that the designated course is continuously being made good.

Currents.—Current directions are the true directions toward which currents set.

Dangers.—As a rule outer dangers are fully described, but inner dangers which are well-charted are, for the most part, omitted. Numerous offshore dangers, grouped together, are mentioned only in general terms. Dangers adjacent to a coastal passage or fairway are described.

Distances.—Distances are expressed in nautical miles of 1 minute of latitude. Distances of less than 1 mile are expressed in meters, or tenths of miles.

Geographic Names.—Geographic names are generally those used by the nation having sovereignty. Names in parentheses following another name are alternate names that may appear on some charts. In general, alternate names are quoted only in the principal description of the place. Diacritical marks, such as accents, cedillas, and circumflexes, which are related to specific letters in certain foreign languages, are not used in the interest of typographical simplicity. Geographic names or their spellings do not necessarily reflect recognition of the political status of an area by the United States Government.

Heights.—Heights are referred to the plane of reference used for that purpose on the charts and are expressed in meters.

Index-Gazetteer.—Navigational features and place-names are listed alphabetically in the back of the book. The approximate position, along with the Sector and paragraph numbers (e.g. **1.1**), facilitate location in the text.

Internet Links.—This publication provides internet links to web sites concerned with maritime navigational safety, including but not limited to, Federal government sites, foreign Hydrographic Offices, and foreign public/private port facilities. NGA makes no claims, promises, or guarantees concerning the accuracy, completeness, or adequacy of the contents of the web sites and expressly disclaims any liability for errors and omissions of these web sites.

Light and Fog Signals.—Lights and fog signals are not described, and light sectors are not usually defined. The Light Lists should be consulted for complete information.

Ports.—Directions for entering ports are depicted where appropriate by means of chartlets, sketches, and photos, which facilitate positive identification of landmarks and navigational aids. These chartlets and sketches are not always to scale, however, and should be used only as a general informational guide in conjunction with the best scale chart. Specific port facilities are omitted from the standard format. They are tabulated in Pub. 150, World Port Index.

Radio Navigational Aids.—Radio navigational aids are not described in detail. Publication No. 117 Radio Navigational Aids and NOAA Publication, Selected Worldwide Marine Broadcasts, should be consulted.

Soundings.—Soundings are referred to the datum of the charts and are expressed in meters.

Special Warnings.—A Special Warning may be in force for the geographic area covered by this publication. Special Warnings are printed in the weekly Notice to Mariners upon promulgation and are reprinted annually in Notice to Mariners No. 1. A listing of Special Warnings currently in force is printed in each weekly Notice to Mariners, Section III, Broadcast Warnings, along with the notice number of promulgation. Special Warnings are also available on the Maritime Division website.

Wind Directions.—Wind directions are the true directions from which winds blow.

Reference List

The principal sources examined in the preparation of this publication were:

British Hydrographic Department Sailing Directions.

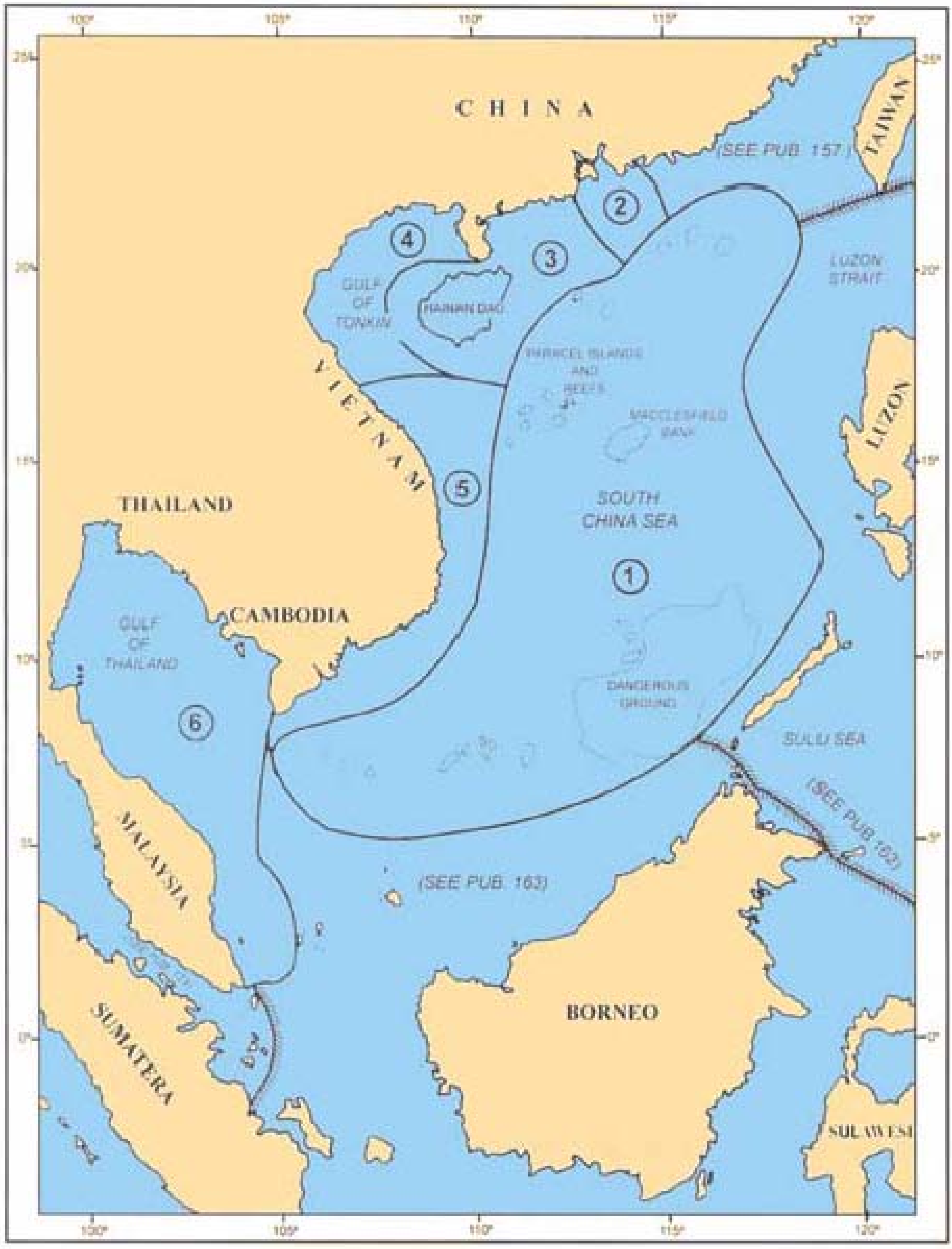
Canadian Hydrographic Service Sailing Directions.

Various port handbooks.

Reports from United States naval and merchant vessels and various shipping companies.

Other U.S. Government publications, reports, and documents.

Charts, light lists, tide and current tables, and other documents in possession of the Agency.



SECTOR LIMITS—**PUB. 161**

Bremen Bank lies 15 miles N of Bombay Reef; it is 14.5 miles long and ENE-WSW oriented, having a least depth of 11.4m near its SW end. In 1954, the bank was reported to be extending W.

Jehangire Reefs lie about 5 miles ENE of Bremen Bank. There are three detached patches with the least depth being 12.8m on the SW part of the S patch. The depths among the patches are very irregular.

Bombay Reef (16°02'N., 112°31'E.), the southeasternmost known danger of the Paracel Islands, is a steep-to reef 10 miles long E and W that surrounds a rock-strewn lagoon. The sea breaks on the reef where there are several rocks awash, four above-water rocks, and the remains of many old wrecks. The stranded wreck on the NE extremity of the reef was reported to be radar conspicuous up to 15 miles. A light is shown from the SW extremity of this reef.

Caution.—Caution is necessary when navigating in the vicinity of Bombay Reef.

There is a 1.2m bore at HW which resembles breakers on a reef between Bombay Reef and Vuladdore Reef.

Vuladdore Reef lies about 35 miles NW of Bombay Reef. It is 7 miles long, a little over 2 miles wide, and has a few rocks above-water. At times, the sea breaks heavily over this reef.

Discolored water is reported (2008) to lie approximately 87 miles ENE of Bombay Reef light in position 16°38.1'N, 113°48.0'E.

1.17 Discovery Reef (16°14'N., 111°40'E.) takes the form of a large atoll lying about 20 miles WSW of Vuladdore Reef. The reef is steep-to and marked by heavy overfalls. Several above-water rocks lie on the reef which has barely 3.7m of water over any part of it. Boats can enter the lagoon through channels on the N and S sides of Discovery Reef, the narrower channel being the one on the N side. A stranded wreck lies on the S side of the reef.

Passu Keah (16°03'N., 111°46'E.) is a sand cay located on the W end of a steep-to reef which is 5 miles long in an E-W direction. It is located about 8 miles S of Discovery Reef.

Triton Island (15°47'N., 111°12'E.) is the southwesternmost danger in the Paracel Islands. It is a sand cay about 3m high and less than 1 mile in diameter. The surrounding reef is steep-to, with at most 1.8m of water over it; it extends about 1 mile N and NE and about 0.5 mile in other directions. The island is a breeding place for birds. In 1986, a square white building was reported to be conspicuous near the center of the island.

Caution.—Triton Island is extremely difficult to distinguish when approaching the Paracel Islands from the SW. A wide berth to the W is recommended. It has been reported that Triton Island has not shown on radar when vessels have been as close as 1 mile.

Macclesfield Bank

1.18 Macclesfield Bank (15°45'N., 114°20'E.) is a submerged atoll about 75 miles long on its NE-SW axis and about half that wide at its broadest part. Its W edge lies about 35 miles SE of the main Hong Kong-Singapore route.

Caution.—Caution should be exercised in the vicinity of Macclesfield Bank. Although the bank can usually be seen from aloft due to the fact that in heavy weather the sea along its edge is high and confused, the W part of the reef and lagoon have been only partially examined. Shoals other than those charted may exist. It is recommended that vessels pass either well W or E of the bank.

The coral rim of Macclesfield Bank, with an average width of 3 miles, has depths of 11.8m at Pygmy Shoal on the NE end of the bank and depths of 11.6 to 18m elsewhere. Many other shoals lie around the rim with their depths best seen on the chart. Within the lagoon, Walker Shoal is the shallowest known danger, with a depth of 9.2m.

1.19 Truro Shoal (16°20'N., 116°43'E.), with a depth of 18.2m, lies 110 miles E of Pygmy Shoal. In 1983, the position of the shoal was reported to be doubtful.

Scarborough Reef (Scarborough Shoal) (15°08'N., 117°45'E.) consists of a narrow belt of barely submerged reef enclosing a lagoon. On the belt are scattered rocks which are visible at a considerable distance. A score or more of these rocks, standing 1.5 to 2.5m high, are found on the SW corner of the reef with South Rock, the highest of these scattered rocks, on its SE extremity. In 1986, the reef was reported to lie 2 miles N of its charted position. Scarborough Reef Light is shown from the NE side of the reef.

Close N of South Rock is a channel about 0.2 mile wide with general depths of 7.3 to 9.2m leading into the lagoon.

This channel is encumbered with reef patches as shallow as 2.7m; the lagoon is almost completely filled with subsurface coral heads at about 15m intervals.

A radar-conspicuous stranded wreck, used as a bombing target, is located on the SE side of the reef in approximate position 15°05'30"N, 117°50'00"E. Fishing vessels frequent the reef.

The ruins of an iron tower stand close to the above channel opening. A line of breakers marking the reef has been seen at a distance of 10 miles. Currents in the vicinity of the reef vary with the monsoons, setting NE during the Southwest Monsoon, and in a W or NW direction during the Northeast Monsoon.

Dangerous Ground

1.20 In the SE part of the South China Sea lies an oblong area about 52,000 square miles in extent, known as Dangerous Ground. Dangerous Ground is a large area to the NW of the Palawan Passage which is known to abound with dangers. No systematic surveys have been carried out in the area, and the existence of uncharted patches of coral and shoals is likely.

Sovereignty over some of the islands in Dangerous Ground is subject to competing claims which may be supported by a force of arms. Vessels are warned not to pass through this area.

The area is studded with sunken reefs and coral atolls awash. The major axis of the area bears about 045°-225° for a distance of 340 miles with a maximum breadth along its minor axis of 175 miles. For the approximate limits of Dangerous Ground, the appropriate charts should be consulted.

Squalls frequently arise temporarily reducing visibility to zero. The sea is usually a greenish-blue color with a transparency to depths of 24 to 42m, and on clear days with the sun behind the observer at an altitude of more than 30°, it is possible to make out the bottom clearly at a depth of 29m.

Sunken reefs may not show discoloration when the sun is low, the sea is mirror like, or the sky is overcast. Close to shoal water, discoloration may not be apparent, but the flow of currents against the wind may cause a belt of rips.

Occasionally the presence of an atoll may be detected by reflection of the discolored water on the underside of clouds directly above it. At low tide, drying patches and rocks are more easily located. With a gentle or moderate breeze, breakers become visible, marking reefs awash.

Winds—Weather.—During the Northeast Monsoon, there are very few squalls and these are of short duration. The weather is comparatively dry and fair with prevailing winds from the NE. Little or no swell was observed during the Northeast Monsoon. When circumstances require, this is the best season for navigating in the region of Dangerous Ground.

The onslaught of the Southwest Monsoon brings increasing cloud cover and squall activity. The wind velocity ranges from a dead calm to a strong breeze, becoming variable in direction.

As the Southwest Monsoon gathers strength, the sea becomes rough and the sky overcast. A fresh SW breeze, accompanied by a moderate to rough SW sea and heavy rains, prevails during the middle months of this monsoon. A moderate SW swell may arise that is usually greater in the W than in the E of Dangerous Ground.

There are many days during the Southwest Monsoon when it is impossible to obtain celestial observations. Considerable atmospheric disturbance to long wave radio broadcasts may be experienced. The high humidity may cause some damage to radio apparatus.

Tides—Currents.—Accurate information on ocean currents is not available in the region of Dangerous Ground.

Caution.—Throughout the area of Dangerous Ground, vessels must rely heavily on seaman's eye navigation and should not normally enter the area other than in daylight.

Radar is of little value. The reefs rise abruptly from ocean depths, hence, soundings give no warning. An uncharted sounding of less than 1,100m should at once call for extreme caution. Difficulty may be experienced with celestial observations because of false horizons. In April or May, during fair weather, mirages are frequently encountered.

Vessels are cautioned not to enter the area other than in an emergency. Little advantage can be had in deviating from the recommended routes in the South China Sea to cross this area in view of the extensive dangers to be encountered. Due to the conflicting dates and accuracy of the various partial surveys of Dangerous Ground, certain shoals and reefs may appear on one chart, but not on another regardless of the scales involved.

Charted depths and their locations may present considerable error in the lesser known regions of this area. Avoidance of Dangerous Ground is the mariner's only assurance of safety.

1.21 North Danger Reef (11°25'N., 114°21'E.) is a steep-to coral formation lying to the NW of Dangerous Ground. It is about 8.5 miles long and encloses, but does not shelter, a lagoon. This lagoon is remarkably flat in the inner portions where it has been wire dragged to a depth of 18m, with the exception of an isolated coral head, wire-dragged to a depth of 14.6m, in about the center of the lagoon. The surrounding reef is shallow and variable in width. There are many dangers with depths of less than 9.2m. All known dangers are plainly visible in suitable conditions of light.

North Reef, at the NE end of North Danger Reef, dries in patches. The sea breaks heavily on its weather side during the Northeast Monsoon. North Pass separates North Reef from North East Cay, but is recommended only for small craft entering the lagoon.

North East Cay (11°27'N., 114°21'E.) is about 0.4 mile long in a NE-SW direction and fringed by a drying reef extending 0.5 mile NE. It is 3m high, 91m across at its widest point, and covered with shrubs. A light is shown close NE of North East Cay. Shira Islet, a conspicuous hummock, lies about 0.2 mile SE of the observation spot on the SE end of North East Cay.

Middle Pass separates North East Cay from South West Cay. The pass is about 0.75 mile wide and has been wire dragged to a depth of 6.4m in its middle part.

Tidal currents, having a rate of about 1.8 knots, have been experienced in this pass.

South West Cay, located toward the SE part of a drying reef, is thickly wooded. A mast stands near the center of the cay and a gray metal tripod supports a radar reflector on the NE end of South West Cay. Landings have been effected on the SE side of the cay and are possible during the Southwest Monsoon. There are a few buildings on the cay. The cay is marked by a light.

West Pass is divided into two parts. The N part lies between Jenkins Patches and South West Cay and is wire dragged to 10m through its center to the lagoon. Jenkins Patches have a least known depth of 3.7m and occasionally break. The S part of West Pass separates Jenkins Patches from South Reef. This pass is dragged to 8.4m and is about 0.5 mile wide.

1.22 South Reef (11°23.3'N., 114°17.9'E.), at the SW end of North Danger, dries in patches. A rock, that dries 1m, stands on the SE side of the reef. The sea breaks heavily on the weather side of this reef during the Southwest Monsoon. Both this reef and North Reef appear greenish-white and can be easily distinguished in fine weather.

The remainder of the encircling reef, to the E then N of South Reef to North Reef, contains two more passes and several named shoals.

South Pass, dragged to 8.5m, is about 0.5 mile wide and is separated from East Pass by Sabine and Farquharson Patches. East Pass, about 1.2 miles wide, has clear depths of 7.7 to 9.3m. Day Shoal, which always breaks in rough weather, and Iroquois Ridge lie N and NW, respectively, of East Pass.

Tides—Currents.—The tides are almost entirely diurnal, with a large diurnal inequality.

The currents near and within North Danger Reef seldom exceed 1.5 knots. The currents appear to be mainly seasonal, depending on the prevailing monsoon and there is very little relation between the tides and the currents. Near the reef, currents having rates of a little over 1 knot may be experienced, with the direction depending on the prevailing wind.

Anchorage.—Ships have anchored about 0.5 mile S of North East Cay during the Northeast Monsoon and 1.25 miles SSE of South West Cay after proceeding through West Pass. Throughout the lagoon there is good holding ground, coral sand. There is little shelter, however, as the depths over the sunken rim of the atoll are too great to restrict the seas.

Trident Shoal (11°28'N., 114°40'E.) is a submerged coral atoll lying 16 miles E of North Danger Reef. A reef, awash, lies at the N end of the shoal. Depths of 3.9m and 7.3m lie E and

W, respectively, of this drying reef. No entrance to the lagoon can be recommended due to the lack of complete information concerning the atoll.

Lys Shoal, with a least depth of 4.9m, is steep-to and lies to the SSW of Trident Shoal.

Thitu Island and and its adjacent reefs consist of several dangerous patches upon two coral banks extending 12 miles in an E-W direction and separated by a deep narrow channel.

1.23 Thitu Island (11°03'N., 114°17'E.) lies near the SW part of a drying reef on the E end of the W of the two coral banks. It is 4m high and overgrown with grass and scrub brush.

A light is shown from the SW end of the island near a palm grove and a well is found near the beach through the palms. Occasionally, fishermen inhabit the island as it is possible to effect a landing during the Northeast Monsoon in the middle of the W side where there is an opening in the fringing reef.

Anchorage can be taken outside the reef, about 1 mile SW of the island, in a depth of 18m, from which position the reef is visible.

The W reefs of Thitu Island are composed of several drying reefs and shoal patches. A sand cay lies on one of these drying reefs about 3.5 miles W of the island. Entrance to the lagoon can be taken through the passage to the E of the sand cay, with a least depth of 9m in the center of the channel. Many of the surrounding reefs are marked by breakers.

The E reef, its W edge lying about 0.7 mile E of Thitu Island, is a mass of drying coral and shoal water. This reef extends about 4.5 miles in a NE direction.

Subi Reef (10°54'N., 114°06'E.) is located 14 miles SW of Thitu Island. It dries, surrounds a lagoon, is steep-to, and usually breaks. There is no apparent entrance into the lagoon.

Loaita Bank, comprised of shoals, reefs, an island, and two sand cays that lie on the perimeter of a lagoon, is about 20 miles in length on its NE-SW axis which extends to the NW of Dangerous Ground.

1.24 Loaita Island (10°41'N., 114°25'E.), 2m high, is on a drying reef at the S edge of Loaita Bank. The island is covered with mangrove, bushes, trees, and coconut palms.

Two reefs lie about 5 miles NW of Loaita Island, with a sand cay on the N drying reef, and a stranded wreck marking the reef to the SW. Between these reefs and the island are several shoals, some with least depths of 5.5m.

About 2.3 miles ENE of the island is a reef, which partially dries, and 4.5 miles farther to the ENE, lies Lankiam Cay, a sand cay in the middle of another drying coral patch. Two drying reefs lie 3.2 miles ENE and 4.5 miles NE, respectively, from Lankiam Cay.

Least depths of 7.3m have been found along the NW edge of Loaita Bank, NW of the SW drying reefs of the bank. No known depths of less than 11m are found N of a position about 1 mile N of the easternmost drying reef and for a distance of about 7.5 miles along the E edge of the bank to its N extremity.

Anchorage can be taken on Loaita Bank with Loaita Island bearing 260°, distant 0.4 miles. The reef is visible from this position.

Tizard Bank, 30 miles S of Loaita Bank, is over 30 miles in length. It consists of a lagoon bordered by shoals of irregular depth, and by reefs which dry. There are islets on two of the reefs and a sand cay on another. Several coral heads with depths of 6.8 to 12.8m lie in the lagoon. Fishermen from Hainan Dao visit the islands annually around December and January, and leave at the commencement of the Southwest Monsoon.

Caution.—There are several passes through the fringing reefs and the lagoon within, each of which contain numerous dangers which require local knowledge.

These entrances should be used only under the most favorable conditions of light, sea, and weather.

Depths of up to 3.7m less than charted can be expected over the coral shoals and that the shapes of the drying reefs have also changed considerably. Mariners should navigate with extreme caution in this vicinity.

1.25 Namyit Island (10°11'N., 114°22'E.), on the S side of Tizard Bank, about 12 miles S of Itu Aba, is 18m high and covered with small trees and brush. It lies on a reef which extends a little over 1 mile W and 0.5 mile E.

Gaven Reefs (10°12'N., 114°13'E.) is comprised of two reefs which cover at HW and lie 7 miles W and 8.5 miles WNW, respectively, of Namyit Island. They are the SW dangers of Tizard Bank. The N of the two reefs is marked by a white sand dune about 2m high.

Anchorage can be taken, in 13 to 18m, between Sand Cay and the drying reef to the W. Vessels having local knowledge can anchor in convenient depths within the various passes of Tizard Bank, having due regard for conditions of wind and sea.

Caution.—An ammunition dumping ground lies about 6.7 miles N of Itu Aba Island.

1.26 Itu Aba Island (10°23'N., 114°22'E.), 2m high, lies on the NW corner of Tizard Bank. It is surrounded by a reef that usually breaks and on which a wreck lies stranded. The island is covered with scrub brush and trees whose tops are about 30m high. There are a few buildings, some in ruins, and a tower-like structure on the island. A lookout mast stands near the E end, and a concrete landing jetty, with a depth of 0.6m at its head, near the SW end of Itu Aba Island.

A reef, which uncovers 0.6m, lies 2 miles E of Itu Aba Island. A grass-covered sand cay, 3m high, lies on the reef rim about 4 miles further to the E. There are a few trees between 5 and 10m high on the cay.

Petley Reef, which dries 0.9m, is about 1 mile in extent and lies on the N side of Tizard Bank. Eldad Reef, 7 miles ESE of Petley Reef, is the easternmost drying reef of the group. The reef is 4.5 miles long with the middle section having a depth of about 1.2m, located at the NE end of the reef.

Western Reef (10°16'N., 113°37'E.) lies 36 miles W of Gaven Reefs. It contains submerged rocks, with depths of 1.8 to 5.5m, is steep-to and dangerous.

Discovery Great Reef (10°01'N., 113°52'E.) is a long, narrow atoll that lies with its N end about 18 miles SE of Western Reef. The reef rim has several drying rocks on it of which one, called Beacon Rock, stands on its S end. There is no apparent entrance into the lagoon. This atoll is reported to be visible at a distance of 9.5 miles from a height of 21m.

Discovery Small Reef (10°01'N., 114°01'E.), lying 10 miles E of the S extremity of Discovery Great Reef, is a round, steep-to, coral patch which dries.

Dangerous Ground—East and North of Tizard Bank and Loaita Bank

1.27 Menzies Reef (11°09'N., 114°48'E.) lies at the NE end of a ridge of foul ground that is an extension of Loaita Bank. It is awash at LW and the least depth on the reef, which extends 13 miles SW, is 3.7m.

Between the NE end of Loaita Bank and the SW end of the reef extending from Menzies Reef is a narrow passage having a least known depth of 32.9m.

West York Island (11°05'N., 115°00'E.) is covered with trees and bushes and has some tall coconut palms on its S end.

The reef fringing the island extends 1.25 miles farther off the N side than elsewhere.

Irving Reef (10°52'N., 114°55'E.), located 12 miles SSW of West York Island, dries in patches and encloses a small shallow lagoon. A sand cay lies near the N end of the reef. A narrow channel, with a least depth of 12.8m, separates Irving Reef from a small reef to the WSW.

Southampton Reefs consist of **Livock Reef** (10°11'N., 115°17'E.) and Hopps Reef, about 5 miles NE. Livock Reef, the larger of the two, encircles a lagoon and has a few isolated rocks on it which may be visible at HW.

Jackson Atoll (10°30'N., 115°45'E.) consists of a nearly circular atoll about 6 miles in diameter enclosing a clear, deep lagoon. Five reefs, each with drying patches, lie on the rim of the atoll. There are four main entrances into the lagoon.

The NE and E entrances are the deepest, each having a width of about 1.2 miles and depths of 16.2 and 16.8m, respectively, between the shoals.

Anchorage, with good holding ground, can be obtained anywhere within the lagoon over a bottom of sand and coral, but it provides no shelter during inclement weather.

1.28 Nanshan Island (10°44'N., 115°49'E.), 2m high, is sandy and covered with course grass and a few coconut trees. Fishermen frequent the island. Depths of 12.8 to 21.9m are found S of Nanshan Island, however, there is a possibility of there being less water than this in the vicinity.

Flat Island lies 5 miles N of Nanshan Island. It is a low, sandy islet with a fringing reef extending about 2 miles NE and SE from it.

A large bank, with reported but unconfirmed depths of 46m, extends 8 miles SE from Flat Island and Nanshan Island. Vessels engaged in fishing may be sighted on this bank.

Hopkins Reef (10°49'N., 116°05'E.) lies 15 miles E of Flat Island and is steep-to, shoal, and breaks heavily. Baker Reef and Iroquois Reef lie 7 miles SE and 12 miles SSE, respectively, from Hopkins Reef. Both reefs have drying patches.

These three reefs mark the approximate W limit of Amy Douglas Bank. Hirane Shoal, with a depth of less than 1.8m, lies 18 miles NE of Baker Reef. There are many shoals and reefs, with depths of less than 18m, between Hirane Shoal and Baker Reef.

Hardy Reef, which dries and has a narrow strip of sand in the middle, lies 31 miles S of Iroquois Reef.

Caution.—Directions can not be given concerning Dangerous Ground E to Lord Auckland Shoal and N to Sandy Shoal. The area is relatively unexamined, subject to conflicting reports, and considered dangerous to navigation.

1.29 Sandy Shoal (11°02'N., 117°38'E.), the position of which is doubtful, lies about 15 miles NNW of Seahorse Shoal.

Seahorse Shoal (10°50'N., 117°47'E.) is considered to be part of Palawan Passage, being the N danger on its W side. It is a pear-shaped reef about 8 miles long in a NNE direction and 3 to 4.5 miles wide. It has a least charted depth of 8.2m on the reef and 31m in its lagoon.

Between Seahorse Shoal and Lord Auckland Shoal, 35 miles SW, lies a 16.5m patch in approximate position 10°38'N, 117°38'E that is sometimes referred to as Fairie Queen; its position is doubtful.

Lord Auckland Shoal (10°20'N., 117°19'E.) has a least depth of 14.6m and lies about 15 miles N of Carnatic Shoal; its position is doubtful. Carnatic Shoal has a least depth of 6.4m and lies just within the E edge of Dangerous Ground; its position is also doubtful.

Dangerous Ground—South of 10°N

1.30 Half Moon Shoal (8°52'N., 116°16'E.) lies 26 miles WSW of Royal Captain Shoal and consists of a narrow reef, partially awash, that encloses a lagoon. The lagoon affords good shelter to small craft and has an average depth of about 27m, although it contains several coral heads with depths of as little as 0.3m.

The entrance to the lagoon is on the SE side of the reef, about 0.4 mile SW of the inclined rock, 1m high, lying on the E side of the coral belt. The pass is about 200m wide and 12.8m deep between the main reef to the S, and the sunken rock to the N. During the strength of the Northeast Monsoon, entry may be impossible. There is a tidal rise of about 1.2m over Half Moon Shoal.

Bombay Shoal (9°26'N., 116°55'E.), located 47 miles SW of Carnatic Shoal, consists of a steep-to reef which completely encloses a lagoon. Depths of 29 to 33m, sandy bottom, are found in the lagoon. On the reef are several rocks which dry about 0.6m. Madagascar Rock, which dries 0.6m, lies near the NE extremity of the reef. Two stranded wrecks lie on the NE side of Bombay Shoal. There is a tidal range of about 1.2m over the shoal. A NE flood current was observed in the vicinity of Bombay Shoal.

1.31 Royal Captain Shoal (9°01'N., 116°40'E.) stands just E of the charted limit of Dangerous Ground, about 27 miles SW of Bombay Shoal. This shoal consists of a narrow unbroken steep-to reef which encloses a lagoon. Depths of 27 to 31m, sand and coral, are found in the lagoon which is also encumbered with coral heads.

Although there is no entrance into the lagoon, small boats can cross the reef at HW under favorable weather conditions. Numerous coral heads and a few drying rocks are found on the reef. Observation Rock, which dries 1.2m, lies on the NW extremity of the reef and conspicuous stranded wrecks are found on the SW and NW corners of the reef. A westerly set of 0.8 knot has been experienced in the vicinity of the shoal.

Investigator Northeast Shoal (9°10'N., 116°25'E.), located 19 miles NNE of Half Moon Shoal, is a coral atoll with an enclosed lagoon. It dries in places and a few rocks may be visible at the W end even at HW.

The lagoon is probably accessible to boats at HW. Anchorage has been taken off the W end of the shoal, in a depth of 46m, about 0.2 mile from the edge of the reef.

Sabina Shoal (9°43'N., 116°36'E.) is a coral atoll 12 miles long on its WNW-ESE axis enclosing a lagoon. On the E half are a number of reefs awash and on the W portion depths over the reef are 3.7 to 18.3m. Sabina Shoal provides unprotected anchorage off its steep-to reef. Three rocks awash lie in an arc from N to ENE, 6 to 8 miles off Sabina Shoal.

Caution.—Caution is advised as the shoal has not been closely examined.

1.32 Boxall Reef (9°36'N., 116°10'E.), lying 18 miles SW of Sabina Shoal, is an isolated drying reef. It contains neither a lagoon nor any rocks of distinctive character.

Second Thomas Shoal (9°49'N., 115°52'E.) lies 35 miles W of Sabina Shoal. It is 11 miles long N-S, and surrounds a lagoon having depths of up to 27m which may be accessible to small boats from the E. Drying patches are found E and W of the reef rim.

1.33 Mischief Reef (9°55'N., 115°32'E.) is a circular coral atoll about 4 miles in diameter. The reef, which is awash and has several drying rocks, encloses an extensive lagoon containing an average depth of 26m. The SW part of the lagoon is free of dangers and affords good shelter, but the NE part is encumbered with coral heads with depths of less than 1.8m. Many of these heads are pinnacles, which are difficult to detect even with good lighting conditions.

There are three entrances to the lagoon along the S and SW sides of the atoll, two of which are boat channels.

South Entrance, the westernmost, has a navigable width of 37m and is 300m in length, with depths of over 18.3m. The axis of the deepest water, clearly defined in good light by its deep blue color, lies in a slight curve, approximately parallel to the edge of the reef on the W side commencing in a direction of about 005°, then curving N and terminating in a direction of about 354°. The reef on the W side is steep-to and on the E side is slightly shelving. Care is necessary since the tidal currents are strong at times, and set nearly across the entrance. At neap tides, a tidal current of 1.5 knots was observed.

South Entrance is accessible to vessels under 91m in length. Temporary buoys should be laid at the ends and middle of each side to assist conning. Vessels should enter with good headway keeping slightly W of the center of the deepest water.

Caution.—It was reported (1995) that the area within a 60 mile radius of Mischief Reef has been declared prohibited to all vessels.

1.34 First Thomas Shoal (9°20'N., 115°57'E.) is 5 miles long in an E-W direction. This reef, on which a few isolated rocks about 1m high have been observed, dries and entirely encloses a shallow lagoon.

Alicia Annie Reef (9°24'N., 115°26'E.) lies 26 miles W of First Thomas Shoal with its axis in a N-S direction. The reef, which dries, completely encloses a lagoon, however, there is no entrance to it. At LW, the N and S ends of the atoll are well above-water and the entire edge of the reef dries about 0.3m.

At the N end, a spit which appears to be white sand, dries 1.2m. Several large and a few small rocks mark the SE corner of the reef. The outer edge of the rim of the reef is steep-to and breakers were observed on the NE side with a moderate NE breeze.

Union Atoll (9°45'N., 114°25'W.), 70 miles WNW of Alicia Annie Reef, extends in a NE-SW direction and encloses an incompletely examined lagoon about 28 miles long and up to 7.5 miles wide. There are numerous entrances through the reefs and an anchorage lies within. The rim of the atoll contains numerous drying reefs and several small cays.

Johnson Reef (9°42'N., 114°17'E.), of brown volcanic rock with white coral around the inner rim, is located at the SW end of Union Atoll. Johnson Reef partly encloses a shallow lagoon entered from the NE. The largest rock on the reef is about 1.2m high. Several other rocks show above the water on the SE part of the reef; the remainder of the reef is reported to be covered.

Discolored water was reported (1992) to lie SW of Johnson Reef in position 9°32.5'N, 114°02.0'E.

Collins Reef, a small reef with a coral dune at its SE part, lies 1.5 miles NNW of Johnson Reef. It is separated from Johnson Reef by a relatively deep channel with a coral bottom.

1.35 Sin Cowe Island (9°52'N., 114°19'E.), a reef-fringed cay, 4m high, lies on the NW side of Union Atoll. There are some buildings on the island and a beacon at its NE end.

Whitsun Reef (9°58'N., 114°39'E.) is triangular in outline and lies at the NE end of Union Atoll. Rocks on the reef uncover at LW and the reef is marked by breakers in winds of moderate force.

Grierson Reef, a small cay lying 5 miles SW of Whitsun Reef, is formed by sandy beaches with two black above-water rocks to the S.

The W lagoon is accessible only to small boats and has depths of 5.5 to 14.6m interspersed with coral shoal heads.

Lansdowne Reef, a shoal with a white sand dune, lies 6 miles NE of Johnson Reef.

1.36 Bittern Reef (9°14'N, 113°40'E) is reported to be circular in shape and to be of volcanic origin. It does not contain a lagoon and is entirely covered with water. It is considered very dangerous because no breakers show and its sides are very steep-to. Its greatest diameter is estimated at less than 0.5 mile. According to a Japanese survey, the least depth on the shoal is 0.9m and the discoloration of Bittern Reef is visible from the bridge for about 3.5 miles, and from the masthead for about 4.5 miles with a high sun behind the observer.

Allison Reef (Alison Reef) (8°50'N., 114°00'E.) is a drying atoll-reef about 11 miles long in a general NW-SE direction forming a lagoon which appears to be shallow and foul. It lies with its W end about 13 miles SE of Pearson Reef. On the N side in a position about 2.5 miles W of the W end there is an entrance 0.35 mile wide with a depth of 9m. The side is strewn with small rocks. At LW, some of these uncover about 0.9m.

The S side consists of a number of isolated drying patches between which there are narrow channels with depths of about 9m. At HW, Allison Reef does not uncover, but it can be located by the breakers, which can be seen at a distance of 5 or 6 miles on a clear day.

Anchorage is possible off the SE and W ends of Allison Reef, in a depth of 60m, or along its S side and off the N entrance to the lagoon, in depths of 9m.

Cornwallis South Reef (8°45'N., 114°13'E.), 8 miles ESE of Allison Reef, consists of a drying reef enclosing a lagoon which is open to the S.

The entrance is about 0.2 mile wide and contains several coral patches. Depths of 9m are found within the lagoon, but it has not been closely examined. There are some small drying rocks on the SE side of the reef which breaks in a NE wind.

Cornwallis South Reef remains identifiable at HW.

1.37 Pearson Reef (8°59'N., 113°42'E.) is a drying steep-to atoll about 5 miles long in a WSW direction and 1 mile wide. It encloses a lagoon to which there is no apparent entrance.

There is a sand cay on the NE extremity of the reef. On the NW side of the reef is a stranded wreck.

Anchorage can be taken 0.2 mile off the NE end of the reef, in a depth of 27m.

Pigeon Reef (Tennent Reef) (8°52'N., 114°38'E,.), marked by a light, is a triangular-shaped drying atoll completely enclosing a lagoon which is accessible to boats at HW. There is no entrance. The reef is brown in color and of volcanic origin with a lining of white coral around the inside of the rim.

Commodore Reef (8°22'N., 115°14'E.) is an atoll about 7 miles in length, and extends E and W lying about 47 miles SE of Pigeon Reef. It dries 1.5m on its W end, and in patches elsewhere around its circumference. The reef forms two lagoons with a sand cay 0.5m high on the neck between them.

The E lagoon has not been closely examined, but appears to be shallow and full of rocks. The encircling reef is completely covered at HW, except for the sand cay near the middle and a rock 0.3m high at the E end.

1.38 Investigator Shoal (8°10'N., 114°40'E.), an irregular atoll formation, lies with its E extremity about 25 miles SW of the W end of Commodore Reef. The shoal, which extends in an E-W direction for 18 miles with a width of 8 miles, is surrounded by a coral reef on which there are a few drying sections, but over the larger part of which there are depths of 5.5 to 18.3m.

Large fishing vessels enter the lagoon in fine weather through a channel near the middle of the N side of the reef to anchor in depths probably over 46m, although little or no shelter is provided by the atoll.

The S side of the reef is steep-to with an apparent entrance at its SE end that is 0.2 mile wide and 37m deep, except for two patches with a depth of 11m. The W end of the reef breaks and has a few isolated rocks which may be visible at HW. There are two drying rocks on the S side of the shoal.

Currents, with velocities up to 1 knot, are reported on all sides of Investigator Shoal.

Ardasier Reef (7°38'N., 113°56'E.) is the W extremity of Ardasier Bank, which lies 14 miles NNE of Swallow Reef.

This reef, which dries, encloses a shallow lagoon which is probably accessible to boats at HW. The reef is steep-to except on its E side, where it joins Ardasier Bank.

Ardasier Bank extends 37 miles ENE from Ardasier Reef. It is surrounded by a fringe of coral, over which there are depths of 3.7 to 18.3m. The depths in the center of the bank are believed to be from 37 to 55m, though unexamined.

Fish aggregating devices may be encountered in the vicinity of and SW of Ardasier Bank.

Tides—Currents.—Currents in the area S of Investigator Shoal and Ardasier Reef appear to set to the W.

Currents, with a velocity of up to 1 knot, are reported on all sides of Ardasier Bank. The tides are diurnal, with a range of about 1.5m.

Caution.—Vessels are advised to avoid the vicinity of Ardasier Bank and navigate with caution, especially near the middle of the N side where depths of 40 to 49m show no apparent discoloration.

1.39 Erica Reef (Enloa Reef) (8°07'N., 114°08'E.), lying WNW of the N end of Ardasier Reef, is an oval drying reef that encloses a shallow lagoon. A few drying rocks lie on the E side of Erica Reef and may show at HW. No entrance or anchorage has been found.

Mariveles Reef (8°00'N., 113°56'E.), about 6 miles long in a general NW-SE direction, lies about 7 miles W of Erica Reef. It dries, encloses two lagoons, and has a sand cay 2m high on the neck between the lagoons. A few isolated rocks may be just visible at HW.

Dallas Reef (7°38'N., 113°48'E.) is about 5 miles long E-W and dries entirely, enclosing a small lagoon. A line from Dallas Reef to Barque Canada Reef marks a portion of the approximate SW limit of Dangerous Ground.

Barque Canada Reef is a long narrow reef, nearly all of which dries. It extends about 15 miles NE from a rock 4.5m high in position 8°05'N, 113°14'E.

The lagoon within the reef appears to be fairly deep, but is inaccessible. At the NE end of the reef there is a group of rocks 2m high. This N part is not as steep-to as the S part and temporary anchorage may be taken in favorable weather.

U.S.S. Pigeon Passage

1.40 In 1937, the U.S.S. Pigeon conducted a survey of Dangerous Ground and developed a 10-mile wide channel clear of dangers, except for a shoal patch charted 19 miles SSW of Alicia Annie Reef.

A deep-draft vessel might navigate the passage by day, in comparative safety; under optimum conditions, the passage might be negotiated at night.

Directions.—From position 8°40'N, 116°30'E, the recommended track leads on a course of 291° for 208 miles to position 9°55'N, 113°15'E, then on a course of 327° for 71 miles to position 10°55'N, 112°35'E.

Caution.—Caution should be exercised when using the passage, as the shoal patch mentioned above lies about 3 miles SSW of the track. Due to the nature of the area and the age of the surveys for the passage, less water or dangers in addition to those charted may exist.

Soundings of less than 1,100m are charted near the recommended track SSE and SSW of Alicia Annie Reef. Soundings of less than 1,280m are charted near the recommended track S of Discovery Great Reef.

Islands and Reefs Southwest of Dangerous Ground

1.41 Fiery Cross Reef (North West Investigator Reef) (9°35'N., 112°54'E.), marked by a light, is about 14 miles long NE-SW, steep-to, and composed of coral patches, several of which dry. The largest drying patch is located at the SW end of the reef and supports a prominent rock, 1m high. With the exception of this rock, the reef covers at HW. Breakers occur on Fiery Cross Reef with even a slight swell and make it visible from a distance of several miles.

A dangerous wreck lies 4 miles SW of the NW extremity of the reef.

Anchorage has been taken about 0.2 mile from the reef, with the prominent rock bearing 062°, distant 0.7 mile, in a depth of 24m.

London Reefs consists of four reefs on a line between **Cuarteron Reef** (8°54'N., 112°52'E.) and **West Reef** (8°51'N., 112°11'E.). Caution is necessary when navigating in the vicinity of London Reefs as they are all steep-to, rendering soundings of little value. They should not be approached with the sun ahead, as it becomes difficult to recognize the shoaling water and breakers.

Cuarteron Reef is the easternmost of the London Reefs. Several rocks, 1.2 to 1.5m high, lie on the N side of the reef.

The shallow lagoon within the reef has no entrance.

Currents at Cuarteron Reef are apparently diurnal, their rise being 1.8 to 2.1m. The tidal currents along its N side set W during the flood and E during the ebb.

East Reef (8°50'N., 112°35'E.) encloses a lagoon with depths of 7.3 to 14.6m and lies about 16 miles WSW of Cuarteron Reef. Numerous coral heads encumber the lagoon.

A sharp rock, 0.9m high, lies near the W end of the reef; more rocks are visible at the E and S parts of the reef. East Reef is marked by heavy breakers.

1.42 Central Reef (8°55'N., 112°21'E.) lies 14 miles NW of East Reef. Although awash, it is not always marked by breakers. At the SE part of the reef there is an entrance to a shallow lagoon and at the E and SW ends of Central Reef lie two small, white sand cays.

West London Reef (Hsi Chiao), the westernmost danger of London Reefs, is marked by a light and has several detached coral patches around its edges. The N side of the reef is marked by breakers making it visible on the approach from the N, but the S side is difficult to make out, especially in calm weather.

There is a sand cay, 0.6m high, on the E side of the reef. A lagoon, with depths of 11 to 14.6m but having many coral heads, is enclosed by West Reef.

1.43 Spratly Island (Storm Island) (8°38'N., 111°55'E.), grass covered, 2.4m high, flat and less than 0.5 mile in extent, is located about 22 miles SW of West Reef, on the S end of a coral bank over 1 mile long.

The island has a margin of white sand and broken coral and is surrounded by drying ledges and coral heads. A cairn, 5.5m high, stands near its S point.

The E side of the island is steep-to, having depths greater than 18m when beyond 0.1 mile from shore. Depths of less than 14.6m and 5.5m extend 0.5 mile NE and N, respectively, from the island. To the W and SW, depths of less than 5.5m are found up to 0.2 mile off the island before the bottom falls away steeply.

Tides—Currents.—A tidal rise and fall of 1.6m has been reported at Spratly Island. The tidal current sets SW during the rising tide at the NE of the bank, and from SE to NE during the falling tide.

Anchorage.—Anchorage can be taken after gaining proper clearance on the banks either NE or SW of the island. Anchorage has been taken on the bank in a position about 0.6 mile NE of the island, in 18.3m, sheltered from SW winds.

Ladd Reef, 15 miles W of Spratly Island, is a drying reef 3 miles long and 1 mile wide. The reef encloses a lagoon which, for all practical purposes, has no entrance. The reef is marked by a light.

1.44 Amboyna Cay (Anbo Shozhoa) (7°52'N., 112°55'E.) lies near the SW edge of the Dangerous Ground. This cay is about 2m high with a sand beach, broken by coral, and rubble. Coral ledges which partly dry and on which the sea breaks when there is a swell, extend 0.2 mile offshore in places.

An obelisk, 3m high, stands on the SW part of the cay. The cay is also marked by a light, which has a racon.

Coral banks, on which the sea breaks heavily, extend 0.5 mile NW and 1 mile NE from the island with depths of 7.3m to a distance of over 0.3 mile offshore on the latter bank. A reef, having depths of 3.7 to 4.6m, is reported to lie about 0.8 mile NW of the cay.

The W and SW part of Amboyna Cay is fringed by steep-to reefs to a distance of 0.3 mile. The W and SW reefs gradually shoal from depths of 7.6m at 0.2 mile offshore to 1.5m at 27m offshore. About 0.1 mile S of the island, the fringing reef has a depth of 7m.

Tides—Currents.—Tidal currents, with a maximum rate of 1.5 knots, were observed near Amboyna Cay. The current sets N on the rising tide and W on the falling tide.

Anchorage.—Vessels can obtain sheltered anchorage during the Southwest Monsoon, in a depth of 9m, on the reef extending NE from the cay. Additionally, it is reported that anchorage can be taken farther to the NE, in 14.6m, with the center of the cay bearing 224°, distant 1 mile. To the E, a survey ship anchored, in 11.9m, about 0.4 mile from the center of the island; to the W, anchorage can be taken, in 9.5m, with the cay bearing about 109°, distant 0.3 mile.

Caution.—Caution is required when anchoring as the reefs are extremely steep-to.

Swallow Reef, 60 miles SE of Amboyna Cay and formed of a belt of coral surrounding a shallow lagoon, is 3.8 miles in length, E and W, and 1.2 miles in width. At its E and SE part are some rocks 1.5 to 3m high, the highest of which is in position 7°23'N, 113°49'E. Breakers usually mark the reef; a wreck lies stranded (1959) on its W end. By day, Swallow Reef has been sighted at 8 miles. Swallow Reef is reported (1986) to have extended in area.

1.45 Royal Charlotte Reef (6°57'N., 113°35'E.) lies 29 miles SSW of Swallow Reef and is nearly rectangular in shape and about 1 mile long. Several boulders, 0.6 to 1.2m high, lie near its SE side and some rocks, awash, lie on its NE side. An area of foul ground surrounds Royal Charlotte Reef and extends as much as 8 miles from the edge of the reef. Breakers have been reported over this reef.

1.46 Anoa Natuna Marine Terminal (5°13.2'N., 105°36.4'E.) is a Floating Production, Storage, and Offloading (FPSO) vessel.

Aspect.—A converted tanker is permanently moored to a Single Point Mooring (SPM) buoy. A well head platform feeds the FPSO through a pipeline and stands 1 mile NW of it. The platform can be identified by its gas flare from a considerable distance. The FPSO displays a white flashing Morse (U) light at the bow and the stern, as well as a red flashing Morse (U) light at the bow and the masthead.

Pilotage.—Pilotage is compulsory and the berthing master boards vessels at the anchorage. Vessels berth at the terminal during daylight only.

Regulations.—Indonesian Government regulations are strictly enforced. The Indonesian flag should be flown by day throughout the vessel's stay at the terminal. Port facilities are not available. However, emergency medical services can be arranged.

Anchorage.—Anchorage is recommended within a radius of 0.75 mile from position 5°12'N, 105°38'E.

Caution.—A rectangular restricted area of 3 miles by 2 miles has been established surrounding the terminal. Vessels are not allowed to enter a prohibited area within the restricted area around the terminal without the berthing master on board.

Anchoring within the restricted area is prohibited. There are no facilities for bunkers, fresh water, provisions, or reception of dirty ballast.

1.47 Rifleman Bank lies 70 miles W of Amboyna Cay, with Bombay Castle, its N end, lying in position 7°56'N, 111°42'E. The bank extends 28 miles S from Bombay Castle and has a maximum breadth of 15 miles, with many shallow patches of sand and coral around its edges. A light, situated S of Bombay Castle, marks the E side of the bank.

Bombay Castle has a depth of 3m and breaks in all but the finest weather. Johnson Patch., with a depth of 7.3m, lies on the W side of Rifleman Bank; Kingston Shoal, with a depth of 11m, lies at the S end; and Orleana Shoal, with a depth of 8.2m, lies on the E end. The remaining areas between and within these shoals have depths of 7 to 82m, however, the existence of undiscovered dangerous shoals in this area should not be discounted.

1.48 Prince of Wales Bank (8°09'N., 110°30'E.) has a least depth of 7.3m found on its W side. The bank is of coral and its depths are very irregular. The bank is marked by a light on its NE side.

Alexandra Bank, marked by a light and lying about 2 miles SE of Prince of Wales Bank, has a least depth of 5.5m over coral bottom that is distinctly visible.

Grainger Bank, with depths of 11 to 14.6m, lies about 16 miles SW of Alexandra Bank. The coral bottom of the bank is visible over nearly all the bank. The bank is marked by a light.

Prince Consort Bank (7°55'N., 109°58'E.), 30 miles WNW of Grainger Bank, has a least depth of 18m near its NW edge.

The bottom is of sand and coral. Depths of 22 to 24m are found on the W edge of the bank, which is marked by a light.

Vanguard Bank lies 30 miles SSW of Prince Consort Bank and 60 miles SE of the main Hong Kong-Singapore route.

The least depths found are two 16m patches near the N end of the bank. Lights mark the N side of the bank.

An 18m shoal lies 10 miles SSE of the center of Vanguard Bank. Another shoal, with a depth of 13m, lies 25 miles W of the SW end of the same bank and a shoal with a depth of 7.5m lies 10 miles SSW of the 13m patch.

It was reported (1990) that a depth of 12.3m lies close W of the 13m depth.

Lan Tay Gas Field lies 70 miles WNW of Vanguard Bank. Restricted areas, each having a radius of 3 miles, lie centered on the platforms and offshore installations established in position 7°48'N, 108°12'E and position 7°35'N, 108°52'E, respectively.

1.49 Charlotte Bank (7°08'N., 107°36'E.) is the southernmost danger on the W side of the main Hong Kong-Singapore route. The bank is about 4 miles in extent, with a least depth between 8.5 and 11m.

A depth of 33m lies 80 miles S of Charlotte Bank in position 5°47'N, 107°30'E.

Scawfell Shoal (7°18'N., 106°52'E.), lying about 45 miles WNW of Charlotte Bank, has a least depth of 9.1m, coral, near its center.

A reef, 0.5 mile in diameter, lies in position 7°35'30"N, 106°24'00"E. Three dangerous wrecks, with depths of 29m, 20m, and 23m, lie SSW of this reef, at distances of up to 60 miles from the reef.

Annex 234

Japan Coast Guard, *Document No. 204: South China Sea and Malacca Strait Pilot* (Mar. 2011)

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South China Sea and Malacca Strait Pilot
Document No. 204
Source: Japan Coast Guard
March 2011

Part 2: Central Portion of South China Sea and Northern Coast of Vietnam

[. . .]

Lincoln I. (Dong Dao) (height 6m) (16° 40' N 112° 44' E) is the eastern island of the Paracel Is., is covered in shrubs, has a cliff on the northeast shore, and is surrounded by a drying coral reef. The reef extends southwest for a short distance, and extends northeast for approximately 0.3M.

Caution: A narrow, rocky shoal extends southward from the island for approximately 14M, and from there extends another approximately 5M towards the west-southwest. This shoal has not been surveyed, and as such should not be traversed.

Target: A prominent shipwreck lies approximately 1.8M southeast of the island and makes a good radar target.

Anchorage: Good anchorage can be obtained at a coral-bottom location in 18m of water approximately 0.5M from the shore on the leeward side of Lincoln I.

Pyramid Rk. (Gaojian Shi) (height 7m) (16° 35' N 112° 39' E) is a small, cone-shaped rock island located approximately 7M southwest of Lincoln I. When viewed from afar, this small island can be mistaken for [a type of Chinese ship called] a junk.

Neptune Bks. (Beibianlang) is formed from two coral reefs, the northeastern reef (12.3m at its shallowest point) being located approximately 3M west-southwest of Pyramid Rk., and the southwestern reef (16.5m at its shallowest point) being located another approximately 4M southwest from there. These reefs are extremely difficult to spot with the naked eye.

Jehangire Bk. is a reef of irregular depth formed from three separate reefs located approximately 4M east-northeast of Bremen Bk. (Binmei Tan), and the southern reef is reportedly 12.8m at its shallowest point, but the existence of this reef is open to question.

Passu Keah (Panshi Yu) (16° 03’ N 111° 12’ E) is a small sand island located approximately 8M south-southeast of Discovery Rf., and lies at the western tip of a reef that extends approximately 4M east and has a sharp drop-off. There is a ship that ran aground on the northern side of this small island.

Triton I. (Zhongjian Dao) (height approximately 3m) (15° 47’ N 111° 46’ E) is a small sand island, the most southwest of the Paracel Is., and sits on a coral reef that extends approximately 1M northeast and approximately 0.5M in the other directions from the island. There is a shipwreck on the western edge of the reef.

Target: A prominent square white structure reportedly stands near the center of the island.

Section 3. Macclesfield Bk.

(Related Nautical Charts: Japan W1500, W1501; UK 94, 3488)

Macclesfield Bk. (15° 45’ N 114° 20’ E) is a broad shoal lying southeast of the main navigation route between Hong Kong and Singapore, and its western tip I located approximately 66M east-southeast of Bombay Rf. This shoal is a [sunken] atoll comprised of numerous patches (the periphery of the shoal lies at depths of less than 20m). The shallowest location within the atoll is **Walker Sh.** (depth of 9.1m), which is at the center of the shoal. The shallowest location on the periphery of the atoll is **Pigmy Sh.** (16° 14' N 114° 48' E), which lies at the northeast tip of the shoal at a depth of 11.9m. **Penguin Bk.** (15° 38' N 113° 44' E) is located approximately 73M southwest of Pigmy Sh., and is at a depth of 16.5m at its shallowest point at the southeast tip.

Caution: During stormy weather, waters around Macclesfield Bk. produce high waves and rough seas. Only a portion of the seas around this shoal have been surveyed, and it is preferable that ships navigate well away from the shoal.

Chapter 4. Dangerous Ground

Dangerous Ground is a broad expanse of ocean located west of the Palawan Passage, which passes between 12° N and 7° 30' N of the southeastern portion of the South China Sea and the coast of Palawan, and is made up of numerous islands, a drying coral reef, shoals and sandbars.

Caution: Ships are warned not to pass through these waters for the reasons listed below.

(1) The locations of the small islands and shoals and/or shallow spots described in the nautical charts cannot be considered reliable.

(2) Navigation must be done by visual observations because depth sounders cannot be relied on to give accurate readings due to the sudden changes in depth, and a lack of prominent landmarks makes radar practically useless.

(3) A unified survey has not been performed, and as such, there could be large numbers of isolated coral reefs and sandbars that are not described in the nautical charts.

(4) Territorial disputes are ongoing with respect to a number of the islands within this area, and military force could be exercised. In this chapter, the marine waters in the northeast-southwest direction will be described by dividing the area into a northwest side and a southeast side.

Section 1. Northwest Waters

(Related Nautical Charts: Japan W1801; UK 967, 3483; US 93044, 93045, 93046, 93047)

Reed Tablemount (Reed Bk.) (11° 20’ N 116° 50’ E) is a shoal that spreads out to the west of the Palawan Passage, which passes northeast/southwest along the western coast of Palawan in the Philippines, and its bounds are unknown. Its shallowest point (16.5m) is said to be located near the southern tip of the shoal.

Nares Bk. (11° 30’ N 116° 10’ E) is a shoal that is located approximately 12 to 20M west of Reed Tablemount, and its shallowest part (a depth of 17.8m) is at the southeast tip of the shoal. The northern bounds of this shoal are unknown.

North Danger Rf. (11° 25’ N 114° 21’ E) is located at the northernmost part of the northwest side of the waters of Dangerous Ground, and is formed from a coral reef that has a sharp drop-off.

North Rf., which lies at the northeast tip of this reef, and South Rf., which lies at the southwest tip, are both drying reefs.

There is a lighthouse (a gray tower 36m tall, F2824.5) on North Rf.

Ocean Currents: The current in the center of the North Danger Rf. does not exceed a current velocity of 0.5km except when the winds are strong. However, a strong current of 1.0kn or faster is thought to exist either on top of the atoll or in its vicinity.

Caution: The northeast side of North Rf. experiences violent breakers during the northeast monsoon season. Anchorage can be obtained at calm locations on the leeward side. In addition, the southwest side of South Rf. is experiences violent breakers during the southwest monsoon season. Anchorage can be obtained at calm locations on the leeward side.

Thitu I. (height 4m) (11° 03’ N 114° 17’ E) is an island, which is surrounded by drying reefs, located approximately 19M southward of South Rf. at the southwest tip of North Danger Rf., and the west-side shoal of the two coral shoals lies near the eastern tip of the island.

A light beacon is located on the southwest tip of Thitu I.

Subi Rf. (10° 54’ N 114° 06’ E) is a drying reef with a sharp drop-off that encloses a lagoon located approximately 12M southwest of Thitu I., and has breakers under normal circumstances. It is not possible to enter the lagoon.

Itu Aba I. (height 2m) (tree-top height 30m) (10° 23’ N 114° 22’ E) is a reef-encircled island located at the northwest corner of Tizard Bk., which is 35M south-southeast of Subi Rf. A ship that ran aground is still on the reef.

This island is covered with trees, and has a number of buildings (several of which lay in ruins) and a tower-shaped structure.

Target: A light beacon (F2823.5) is located on the east side of Itu Aba I.

Western Rf. (10° 16’ N 113° 37’ E) is a dangerous reef located approximately 33M west of Tizard Bk., and there are a number of sunken rocks (at depths from 1.8 to 5.5m) in the reef.

Discovery Great Rf. (10° 04’ N 113° 52’ E) is a long, narrow atoll the northern tip of which is located approximately 14M southeast of Western Rf., and there are a number of rocks that are dry at low tide at the edge of the reef. There is no entrance leading to the lagoon.

Discovery Small Rf. (10° 02’ N 114° 01’ E) is an isolated circular drying coral reef with an extremely sharp drop-off.

Union Rfs. (9° 50’ N 114° 25’ E) is an atoll, which surrounds a lagoon (length approximately 28M, maximum width approximately 8M) extending in the northeast/southwest direction, located approximately 8M southeast of Tizard Bk. This lagoon has not been adequately surveyed.

Fiery Cross Rf. (9° 50’ N 114° 25’ E) is an isolated coral reef with a sharp drop-off located approximately 47M southwest of Western Rf., and has a number of rocks that are dry at low tide and rocks awash. The depth of the seas between these isolated reefs and rocks is between 15 and 40m. There is a lighthouse (a white tower 29m tall, F2825.17) at the southwest tip of this reef.

Anchorage: Anchorage can be obtained at a location with a depth of 20m between sandbars in the vicinity of the northeast tip of the reef.

Reef Danger: A dangerous sunken ship is located in the vicinity of the northeast tip of this reef.

London Rfs. (8° 52’ N 112° 30’ E) are made up of four reefs extending east-to-west approximately 40M southward to approximately 53M southwest of the Fiery Cross Rf.

(1) **Cuarteron Rf.** (8° 52’ N 112° 50’ E) is blocked on the north side by a rock 1 to 2m in height, and there is no lagoon.

(2) **East Rf.** (8° 50’ N 112° 34’ E) has a shallow lagoon, but there is no entrance.

(3) **Central Rf.** (8° 56’ N 112° 21’ E) has a lagoon that is surrounded by coral and rocks awash.

Caution: This reef cannot always be confirmed by big breakers. In addition, there is a sunken ship on the south side of the reef.

(4) **West Rf.** (Da-Tay) (8° 51’ N 112° 13’ E) has a lagoon (with a depth of 11 to 18m) surrounded by a number of separate coral heads. Entry to this lagoon is possible

from the southeast side, but it is dangerous since the coral heads lie beneath the surface. The Da-Tay lighthouse (a red and white tower 42m tall, F2825.15) is located on West Rf.

Ladd Rf. (Da-Lat) (8° 39' N 111° 39' E) is a drying coral reef, and has a lagoon. There is a lighthouse (a red and white tower, F2825.1) on this reef.

Target: There are three prominent shipwrecks on the reef. A 7,200t steamship ran aground at the northwest tip of the reef and is a good radar target. There are also two other ships that ran aground, one approximately 2M east-northeast, and the other approximately 1.5M east-southeast of the grounded steamship.

Maralie Rf. (Maralle) (9° 12' N 113° 40' E) is an almost circular reef at a depth of 1.8m. In 1992, a change in the color of the water was reported between this reef and Johnson Rf. (9° 43' N 114° 16' E), which lies at the southwest tip of the Union Rfs.

Pearson Rf. (8° 58' N 113° 42' E) is a lagoon-encircling atoll located approximately 14M southward of the **Maralie Rf.**, and there is no clear entrance to the lagoon. There is a small sand island at the northeast tip of this atoll, and a shipwreck at the northwest tip.

Anchorage: Anchorage can be obtained at a location with a depth of 27m located approximately 0.2M off the northeast tip of the atoll.

Alison Rf. (8° 49' N 114° 00' E) is an atoll that encloses a shallow-water lagoon located approximately 14M southeast of Pearson Rf., and the south side of this reef is made up of numerous drying reefs interspersed between narrow channels (with depths of 9m).

Anchorage: Anchorage can be obtained at locations with depths of 60m at the west tip and at a location near the southeast tip of this atoll. Anchorage can also be obtained at locations with depths of 9m either along the south side of this atoll, or off the entrance on the north side.

Barque Canada Rf. (8° 10' N 113° 18' E) is a drying reef approximately 16M in length extending generally southwest/northeast located approximately 46M southwest of Alison Rf., and has a group of rocks near the northeast tip. There is a shipwreck on the southeast side of this reef.

Anchorage: Anchorage can be obtained at a location with a depth of 37m located approximately 0.2M off the northern tip of the reef, but intense rapid tide changes occur on a spit of land in this vicinity.

Ardasier Bk. (7° 45' N 114° 15' E) is a shallow shoal (at depths of 3.7 to 18.3m) approximately 37M long extending southwest/northeast located approximately 62M east-southeast of the Barque Canada Rf., and there are three lighted buoys (special markers equipped with RACONs) along the edge of the shoal.

Section 2. Southeast Waters

(Related Nautical Charts: Japan W1801; UK 3483; US 93044, 93045, 93046, 93047)

Templer Bk. (11° 05' N 117° 17' E) is an oval-shaped shoal (approximately 9M long from north to south, and approximately 5M long from east to west) on the east side of Reed Tablemount (Reed Bk.), and has a depth of 2.7m at its shallowest point near the southeast tip.

Leslie Bk. (11° 04’ N 117° 27’ E) is a nearly circular shoal (with a radius of approximately 2M) located approximately 5M east of Templer Bk., and is at a depth of 16.5m at its shallowest point.

Sandy Sh. (11° 02’ N 117° 39’ E) is located approximately 9M east-southeast of Leslie Bk, but this location is in question.

Brown Bk. (10° 42’ N 117° 20’ E) is a shoal, the bounds of which have not been determined on the west side, located approximately 20M south-southwest of Leslie Bk., and at its shallowest point near the southeast tip is at a depth of 8.2m.

Wood Bk. (10° 40’ N 117° 09’ E) is a shoal located approximately 10M southwest of Brown Bk., and is at a depth of 10.5m at its shallowest point.

Southern Bk. (10° 30’ N 116° 40’ E) is located approximately 25M southwest of Wood Bk., and is a shoal having a number of isolated shoals at depths of less than 10m.

Carnatic Sh. (10° 42’ N 117° 20’ E) is a sandbar at a depth of 6.4m, whose location is in question.

Sabina Sh. (9° 45’ N 116° 28’ E) is a shoal that has not been accurately measured, and is made up of a large number of rocks awash on the eastern half, and of rocks awash enclosing a lagoon with a depth of 3.7 to 18.3m on the western half.

Anchorage: The Sabina Sh. has a sharp drop-off, but anchorage can be obtained at a location with a depth of less than 9m at the edge of the shoal. This anchorage cannot protect against rough seas in bad weather.

Royal Captain Sh. (9° 02’ N 116° 39’ E) is a coral reef located westward of the vicinity of the southern entrance to the Palawan Passage off the western coast of Palawan, and is at the southeast tip of Dangerous Ground. There are a number of prominent rocks that are dry at low tide in the northwest corner of the sandbar, and there is a shipwreck on the western side. Anchorage cannot be obtained here.

Half Moon Sh. (8° 52’ N 116° 16’ E) is made up of a narrow, reef awash enclosing a lagoon (with an average depth of approximately 27m) located approximately 25M west-southwest of Royal Captain Sh.

Commodore Rf. (8° 21’ N 115° 12’ E) is reportedly located approximately 2M east of the location described in the nautical charts. This reef is an atoll that is dry around practically its entire circumference at low tide, encloses two lagoons, and has a low small sand island at a narrow part between the two lagoons.

Investigator Sh. (8° 10’ N 114° 40’ E) is an irregularly shaped atoll located approximately 25M west-southwest of Commodore Rf. This coral reef is dry at low tide in places, but for the most part lies at depths of 5 to 15m.

There are a number of isolated rocks at the western tip of the reef that are visually recognizable even at high tide. A tower is located approximately 4M from the western tip of the reef, and lighted buoys (special markers equipped with RACONs) are located at approximately 10M east-northeast and approximately 14M east of the tower.

Anchorage: Anchorage can be obtained at a location with a depth of 46m located approximately 2M off the western tip of the reef.

Chapter 5. Islands and Reefs Outside Dangerous Ground

Section 1. Islands and Reefs Southwest of Dangerous Ground

(Related Nautical Charts: Japan W1502, W1801; UK 3483; US 93045, 93046, 93047)

Amboyna Cay (height 2m) (7° 54’ N 112° 55’ E) is a small island approximately 30M southwest of Barque Canada Rf., and is made up of two parts. There is an Amboyna Cay lighthouse (a yellow tower 22m tall and equipped with RACON, F2825.18).

Anchorage: During the southwest monsoon season, protected anchorage can be obtained on a reef (9m in depth) that extends northeastward from the island. Good anchorage can be obtained at a location with a depth of 15m at a distance of approximately 1M on course heading of 224° from the center of this small island.

Tidal Current: Tidal currents observed in the vicinity of Amboyna Cay flow at a maximum current velocity of 1.5kn to the north at flood tide current and to the west at ebb-tide current.

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Rifleman Bk. (maximum width approximately 15M) (7° 45’ N 111° 40’ E) is located approximately 70M west of Amboyna Cay.

Bombay Castle (depth of 3.2m) (7° 56’ N 111° 42’ E) has its shallowest point near the northern tip of the shoal. There are breakers here except during good weather. A lighthouse (22m tall, F2825.19) stands on a reef approximately 4M south-southeast of this shoal.

Johnson Patch (depth 7.3m) (7° 47’ N 111° 34’ E) lies on the west side of Rifleman Bk., and **Kingston Sh.** (depth 11m) (7° 34’ N 111° 33’ E) and **Orleana Sh.** (depth 8.2m) (7° 43’ N 111° 45’ E) are located at the western tip and eastern side of the shoal, respectively.

Prince of Wales Bk. (depth of 7.3m at shallowest point) (8° 08’ N 110° 27’ E) is a coral shoal lying approximately 70M west-northwest of Johnson Patch, and its depth is extremely irregular.

Alexandra Bk. (depth of 5.4m at shallowest point) is located approximately 2M southeast of Prince of Wales Bk., and the surrounding coral bottom can be seen quite clearly. There is a development platform on these shoals, and a lighthouse (22m tall, F2825.196) is being installed.

Grainger Bk. (depth of 10.9m at shallowest point) is a coral shoal located approximately 13M south-southwest of Alexandra Bk., there is a development platform, and a lighthouse (22m tall, F2825.194) is being installed.

Prince Consort Bk. (depth of 18.2m at shallowest point) (7° 53’ N 110° 00’ E) is a shoal made up of sand and coral located approximately 22M west-northwest of Grainger Bk., there is a development platform, and a lighthouse (22m tall, F2825.195) is being installed.

Vanguard Bk. (depth of 16.5m at shallowest point) is a shoal located approximately 60M southeast of a major navigation route that is approximately 20M southwest of Prince Consort Bk., there are two development platforms, and lighthouses (22m tall, F2825.192, 193) are being installed.

Charlotte Bk. (depth of 8.7m at shallowest point) (7° 08’ N 107° 35’ E) is a shoal located approximately 25M northwest of a major navigation route, and there is reportedly a shallow area (depth of 21.5m at shallowest point) approximately 8M west-northwest of this shoal.

Scawfell Sh. (depth of 9.1m) (7° 19’ N 106° 51’ E) is a sandbar located approximately 45M west-northwest of Charlotte Bk., and reportedly cannot be identified due to a lack of discoloration and rapid tide changes.

Section 2. Islands and Reefs South of Dangerous Ground

(Related Nautical Charts: Japan W1502, W1801; UK 3483; US 93046, 93047)

Swallow Rf. (P. Layang-Layang) (7° 24’ N 113° 49’ E) is an atoll located south of and very near to the southern boundary of Dangerous Ground, and has two entrances leading to a lagoon on the south side.

The Batuan Rks. (height 2 to 3m) are located at the eastern tip of this reef, and there is a lighthouse (yellow tower 8m tall, F2825.2) on top of a rock. A man-made island (approximately 0.65M long) exists on the southeast side of this reef, and a runway and facilities for tourists are being built there.

Terusan Timur is the east-side entrance (width 90m, depth of 4.8 to 7m) leading to the lagoon, is located west of and very near to the man-made island, and is marked with a beacon.

Two Lima leading lights (000°) guide ships to the north of the reef through Terusan Timur.

Leading Lights: Front light (F2825.22), rear light (F2825.24) located approximately 330m north of front light.

Royal Charlotte Rf. (6° 56’ N 113° 35’ E) is a nearly rectangular reef approximately 1M long located approximately 28M south-southwest of Swallow Rf. and made up of a pile of stones (height 1.2m) and rocks awash. There is a dangerous area that reportedly extends from this reef approximately 8M north-northeast, also extending northwest and northeast. Breakers reportedly occur on this reef. There is a lighthouse (yellow tower 8m tall, F2825.3) on the east side of the reef.

Louisa Rf. (height 0.9m) (6° 20’ N 113° 14’ E) is a coral reef located approximately 40M south-southwest of Royal Charlotte Rf. There is a lighthouse (a yellow tower 8m tall, F2825.4) on the reef.

Tidal Current: A tidal current flowing toward the west-northwest can be observed around Louisa Rf. during the spring tide season.

Chapter 6. Vinh Bac Bo

Overview: **Vinh Bac Bo** (Beibu G. in Chinese) is enclosed on the east by the western coasts of China's Leizhou Bandao and Hainan Dao, on the north by the coast of mainland China, and on the west and south by the coast of mainland Vietnam.

The mouth of the bay between the southwest tip of Hainan Dao and the Vietnam mainland to the southwest thereof is more than 120M.

There are a large number of small islands and sandbars, and the broad Song Ca (Red R.) delta in the northwest portion of the inner part of the bay.

Depth: The depth of the Vinh Bac Bo is shallow overall, measuring approximately 100m near the center of the mouth of the bay. The depth gets shallower as you approach the coast, and in the northern waters averages less than 55m. The bottom of the bay is soft mud for the most part, and is well suited to anchorage. A broad area of muddy water resembling a shoal can be seen from time to time, but the results of most surveys have shown that it is deep water.

The northeast portion of the bay is shallow, with the depth out to 25M offshore generally being 18m or less.

In addition to the shoals and sandbars that border the western and northern coasts of Hainan Dao, there are also submerged reefs within or near the 20m depth contour.

Regulations: Please refer to Part 1.

Commercial Fishing Stakes: You encounter stakes for use in fishing up to 30M out into Vinh Bac Bo. The stakes are made from several long bamboo poles weighted down by a big stone, and have a flag attached. Since shore-boats are normally moored to the stakes, ships must not sail between the bamboo poles and the shore-boats.

Old Minefields: Please refer to Part 1 with regard to the old mine-laying areas.

Monsoons: The northeastern monsoon is weak in these waters, and easterly winds predominate at the start and end of this monsoon season.

Category	Month	Wind Direction and Characteristics	Remarks
Northeastern Monsoons (Oct-Mar)	October	Winds from the northeast – east	Stronger in the south than in the north
	Nov - Feb	Winds out of northeast with velocity of around 4	
Southwestern Monsoons (Apr – Sep)	Jul - Aug	Winds out of southwest	Average wind velocity of around 3
	Sep	Wind direction not constant	

Fog: The number of foggy days observed in these waters is 5% or less between February and April, and there is practically no fog throughout the rest of the year.

Ocean Currents: A western current of between 0.5 to 3kn flows into the Vinh Bac Bo (Beibu G.) from the Qiongzhou Haixia strait between Leizhou Bandao and Hainan Dao during the northeastern monsoon season. This ocean current reaches a current velocity of 2kn in the northern portion of the bay during this season. There are a northwest current and a northern current in the vicinity of the Vietnam coast from Hon Dau (20° 40’ N 106° 48’ E) to Mui Da Nang (16° 08’ N 108° 20’ E) from November through May, with the average current velocity ranging from 0.5kn up to 2kn at times. It is also believed that these ocean currents are cancelled out by a southern current and a southeast current that flow through a broad area in the center of the bay, but the fluctuations [in these currents] are tremendous. The ocean currents change dramatically from June through August, but the counterclockwise southern current and southeast current are believed to be preeminent along the Vietnam coast. The current velocity rarely exceeds 1kn.

Tidal Currents: In the waters off the western shore of Vinh Bac Bo, the flood tide current flows at a current velocity of 1kn to the north, and the ebb-tide current flows at a current velocity of 1.5kn to the south.

Section 1. Baixugong Jiao ~ Quang Ninh P.

(Related Nautical Charts: Japan W1501; UK 1965, 3990; US 93620, 93626, 93629, 93650)

The coastal route along the north shore of Vinh Bac Bo … south-southeast of **Baixugong Jiao** (21° 23’ N 108° 12’ E) (China).

[. . .]

書誌第 204 号

南シナ海・マラッカ海峡
水路誌

SOUTH CHINA SEA AND MALACCA STRAIT PILOT

ベトナム沿岸、南シナ海の諸島、タイランド海湾、
マレー半島沿岸、ボルネオ北西岸、マラッカ海峡、
シンガポール海峡及びスマトラ東岸

平 成 23 年 3 月 刊 行
(2011 年 3 月)

海　上　保　安　庁

注　　意

本水路誌の記載内容は、次回改版まで、最新情報に基づく修正は行われないので、本誌の使用に当たっては、**水路通報、灯台表及び海図などの関係水路図誌**により、十分確認されたい。

序

この水路誌は、平成 19 年 2 月刊行の書誌第 204 号南シナ海・マラッカ海峡水路誌を次の資料によって編集したものである。

1　2010 年刊行の英国版水路誌 NP30 CHINA SEA PILOT Vol. 1
　2010 年刊行の英国版水路誌 NP31 CHINA SEA PILOT Vol. 2
　2009 年刊行の英国版水路誌 NP36 INDONESIA PILOT Vol. 1
　2008 年刊行の英国版水路誌 NP44 MALACCA STRAIT AND WEST COAST OF SUMATERA PILOT

2　平成 22 年 12 月 10 日発行の第 49 号までの日本水路通報、2010 年 12 月 9 日発行の第 49 号までの英国水路通報

3　海上保安庁海洋情報部で収集した各種の資料

なお、本誌の記載事項についてお気付きの点があったならば、直接当部へご通知願いたい。

平成 23 年 3 月

海上保安庁海洋情報部長　　加　藤　　茂

南シナ海・マラッカ海峡水路誌関係海図索引図

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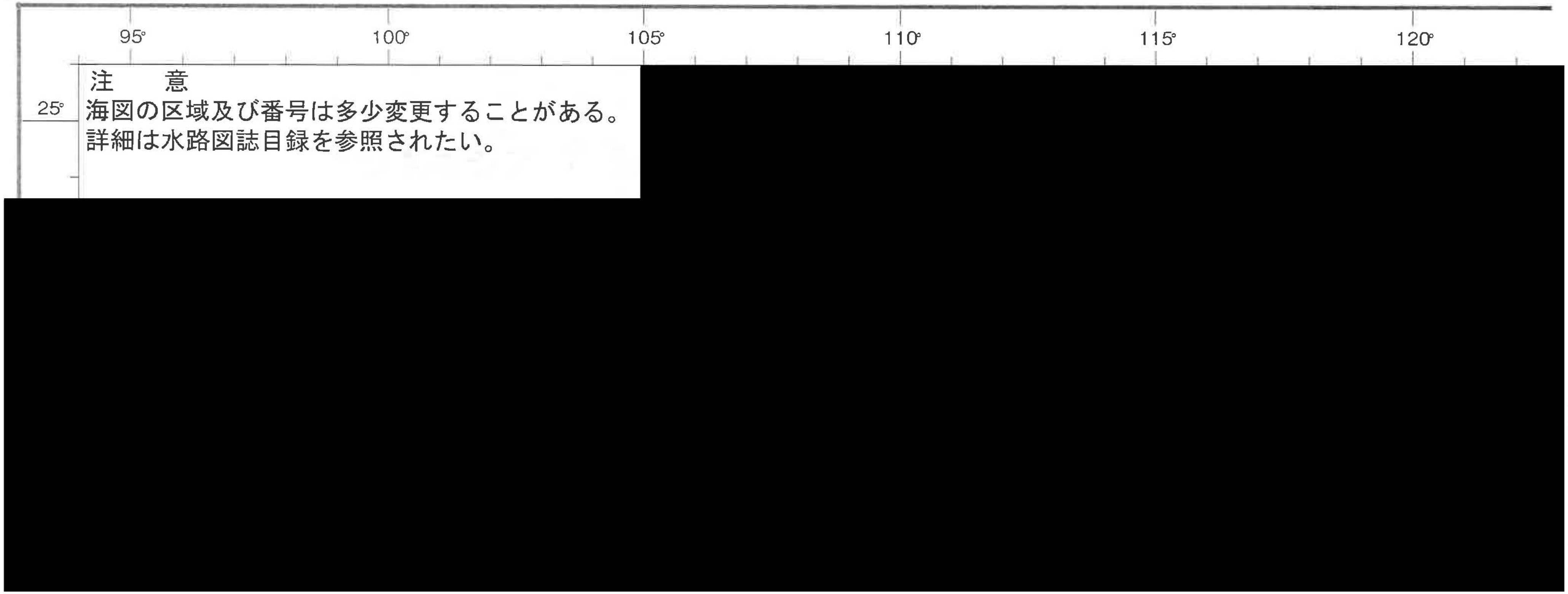


[redacted]

Lincoln I.〔Dong Dao〕（高さ 6m）（16° 40′ N 112° 44′ E）は、Paracel Is. の東島で、低木が茂り北東岸は崖で、干出サンゴ礁に囲まれている。この礁は南西方に短く延び、北東方に約 0.3M 延びている。

注意　岩の点在する狭い堆がこの島から南方へ約 14M、そこから更に西南西方へ約 5M 延びている。この堆は未調査なので、横断してはならない。

目標　顕著な乗揚船が、この島の南東方約 1.8M にあり、レーダの好目標になる。

錨地　Lincoln I. の風下側で、距岸約 0.5M の水深 18m、底質サンゴの所に好錨地が得られる。

Pyramid Rk.〔Gaojian Shi〕（高さ 7m）（16° 35′ N 112° 39′ E）は、Lincoln I. の南西方約 7M にある円錐形の岩小島である。遠方から望むとこの小島をジャンク船と誤認することがある。

Neptuna Bks.〔Beibianlang〕は 2 つのサンゴ礁から成り、北東の礁（最小水深 12.3m）は Pyramid Rk. の西南西方約 3M にあり、南西の礁（最小水深 16.5m）は更にその南西方約 4M にある。これらの礁は視認が極めて難しい。

Jehangire Bk.は **Bremen Bk.**〔Binmei Tan〕の東北東方約 4M にある、3 つの分立礁から成る不規則な水深の礁で、南礁の最小水深は 12.8m であるというが、この礁の存在は疑わしい。

Passu Keah〔Panshi Yu〕（16° 03′ N 111° 12′ E）は Discovery Rf. の南南東約 8M にある砂小島で、東方に約 4M 延びる急深な礁の西端にある。この小島の北側には乗揚船がある。

Triton I.〔Zhongjian Dao〕（高さ約 3m）（15° 47′ N 111° 46′ E）は Paracel Is. 中で最も南西方にある砂小島で、同島から北東方に約 1M、その他の方向に約 0.5M 延びるサンゴ礁上にある。

礁の西縁には乗揚船がある。

目標　白い四角形の顕著な建物が、島の中央部付近にあるという。

第 3 節　Macclesfield Bk.

（関係海図　日本海図 W1500、W1501　英国海図 94、3488）

Macclesfield Bk.（15° 45′ N 114° 20′ E）は Hong Kong 香港～シンガポール間の主要航路の南東方にある広大な堆で、その西端は Bombay Rf. の東南東方約 66M にある。この堆は多くのパッチのある環礁（周縁の水深 20m 未満）である。環礁内の最浅部は **Walker Sh.**（水深 9.1m）で堆の中央部にある。

周縁の最浅部は堆の北東端にある **Pigmy Sh.**（16° 14′ N 114° 48′ E）の北東端で、水深 11.9m である。

Penguin Bk.（15° 38′ N 113° 44′ E）は Pigmy Sh. の南西方約 73M にあり、その南東端は最小水深 16.5m である。

注意　荒天時は、Macclesfield Bk. の周辺では波が高くなり、海面は乱れる。

この堆の周辺は一部しか調査されていないため、船舶はこの堆を十分離して航行することが望ましい。

第 4 章　Dangerous Ground

Dangerous Ground は南シナ海南東部の 12° N～7° 30′ N 間及び Palawan 沿岸を通る Palawan Passage 西方にある広大な海域で、多くの島、干出サンゴ礁、堆及び浅瀬から成る。

注意　この海域は以下の理由などのため、船舶は通航しないよう警告されている。

（1）　海図に記載した小島及び堆や浅所等の位置が信頼できない。

(2)　水深は急激に変化するため測深機に頼れず、顕著な陸標が少ないためレーダは殆ど役に立たないので、目視に頼る航海となる。

(3)　統一的な調査が実施されていないため、海図に記載されていないサンゴ離礁や浅瀬が多数存在する可能性がある。

(4)　この海域内にある幾つかの島については領土問題が生じており、軍事力が行使されることがある。

この章では北東／南西方向に、北西側海域及び南東側海域に分けて記載する。

第１節　北西側海域

（関係海図　　日本海図 W1801　　英国海図 967、3483　　米国海図 93044、93045、93046、93047）

Reed Tablemount（Reed Bk.）（11° 20′ N　116° 50′ E）は、フィリピンの Palawan 西岸沿いに北東／南西に通る Palawan Passage の西方沖に広がる堆で、その限界は分かっていない。最小水深（16.5m）は南端付近にあると言われている。

Nares Bk.（11° 30′ N　116° 10′ E）は、Reed Tablemount の西方約 12～20M にある堆で、その最浅部（水深 17.8m）は、南東端にある。この堆の北限は不明である。

North Danger Rf.（11° 25′ N　114° 21′ E）は、Dangerous Ground 北西側海域の最北部にあり、急深のサンゴ礁から成っている。

この礁の北東端にある North Rf. 及び南西端にある South Rf. はともに干出礁である。

North Rf. 上に灯台（灰色塔、灯高 36m、F2824.5）がある。

海流　North Danger Rf. の中央部では強風時を除き、流速が 0.5kn を超えることはない。また、環礁上又はその付近では、流速が 1.0kn 以上の強い流れがあるものと予想される。

注意　North Rf. の北東側は、北東季節風期に激しく破浪する。風下側の静穏な所に錨地が得られる。

また、South Rf. の南西側では、南西季節風期に激しく破浪する。風下側の静穏な所に錨地が得られる。

Thitu I.（高さ 4m）（11° 03′ N　114° 17′ E）は North Danger Rf. 南西端の South Rf. の南方約 19M にある干出礁に取囲まれた島で、2 つのサンゴ堆のうち西側の堆の東端付近にある。

Thitu I. の南西端に灯標（F2824）がある。

Subi Rf.（10° 54′ N　114° 06′ E）は Thitu I.の南西方約 12M にある礁湖を囲んでいる急深な干出礁で、通常は破浪する。また、礁湖内に入ることはできない。

Itu Aba I.（高さ 2m）（樹頂高約 30m）（10° 23′ N　114° 22′ E）は、Subi Rf. の南南東方 35M にある Tizard Bk. の北西隅にある礁に囲まれた島である。礁上に乗揚船がある。

この島は樹木に覆われており、数棟の建物（幾つかは荒廃している）及び塔状の建物がある。

目標　Itu Aba I. の東側に灯標（F2823.5）がある。

Western Rf.（10° 16′ N　113° 37′ E）は Tizard Bk. の西方約 33M にある危険な礁で、礁内に暗岩（水深 1.8～5.5m）が幾つかある。

Discovery Great Rf.（10° 04′ N　113° 52′ E）は Western Rf. の南東方約 14M にその北端がある細長い環礁で、礁縁には幾つかの干出岩がある。また、礁湖に通じる入口はない。

Discovery Small Rf.（10° 02′ N　114° 01′ E）は非常に急深な円形の干出サンゴ離礁である。

Union Rfs.（9° 50′ N　114° 25′ E）は Tizard Bk. の南東方約 8M にある北東／南西方向に広がる礁湖（長さ約 28M、最大幅約 8M）を取囲む環礁である。この礁湖は十分な調査が行われていない。

Fiery Cross Rf.（9° 37′ N 112° 59′ E）は Western Rf. の南西方約 47M にある急深のサンゴ離礁で、幾つかの干出岩及び洗岩がある。これらの離礁及び岩の間は、水深 15～40m である。この礁の南西端に灯台（白塔形、灯高 29m、F2825.17）がある。

錨地　この礁の北東端付近の浅瀬間で、水深 20m の所に得られる。

険礁　危険な沈船が、この礁の北東端付近にある。

London Rfs.（8° 52′ N 112° 30′ E）は Fiery Cross Rf. の南方約 40M～南西方約 53M に至る東西に連なる 4 個の礁から成っている。

（1）**Cuarteron Rf.**（8° 52′ N 112° 50′ E）は北側を高さ 1～2m の岩でふさがれており礁湖はない。

（2）**East Rf.**（8° 50′ N 112° 34′ E）には浅水の礁湖があるが入口はない。

（3）**Central Rf.**（8° 56′ N 112° 21′ E）にはサンゴ及び洗岩で囲まれた礁湖がある。

注意　この礁は破浪により常に確認できるとは限らない。また、沈船が礁の南側にある。

（4）**West Rf.**（Da-Tay）（8° 51′ N 112° 13′ E）には、幾つかの分立サンゴ頭で囲まれた礁湖（水深 11～18m）がある。この礁湖には南東側から進入できるが、水面下にサンゴ頭があるので危険である。

West Rf. に Da-Tay 灯台（赤白塔形、高さ 42m、F2825.15）がある。

Ladd Rf.（Da-Lat）（8° 39′ N 111° 39′ E）は干出サンゴ礁で、礁湖がある。この礁上に灯台（赤白塔形、F2825.1）がある。

目標　顕著な 3 隻の乗揚船が、礁上にある。礁の北西端には 7,200t の汽船が乗揚げており、レーダの好目標となる。また乗揚船の東北東方約 2M と東南東方約 1.5M にも別の乗揚船がある。

Maralie Rf.（Maralle）（9° 12′ N 113° 40′ E）は水深 1.8m のほぼ円形の礁である。1992 年、この礁と Union Rfs.の南西端にある Johnson Rf.（9° 43′ N 114° 16′ E）との間で、変色水が見られたという。

Pearson Rf.（8° 58′ N 113° 42′ E）は **Maralie Rf.** の南方約 14M にある礁湖を取巻く環礁で、はっきりした礁湖への入口はない。この環礁の北東端に砂小島があり、北西端には乗揚船がある。

錨地　この環礁の北東端沖合約 0.2M の水深 27m の所に得られる。

Alison Rf.（8° 49′ N 114° 00′ E）は Pearson Rf. の南東方約 14M にある浅水の礁湖を取巻く環礁で、この礁の南側は狭い水路（水深 9m）間に点在する多くの干出する礁から成っている。

錨地　この環礁の西端及び南東端至近の水深 60m の所に得られる。また、この環礁の南側沿い又は北側入口沖合の水深 9m の所に得られる。

Barque Canada Rf.（8° 10′ N `113° 18′ E）は Alison Rf. の南西方約 46M にある概ね南西／北東に延びる長さ約 16M の干出礁及び北東端付近に岩群のある礁である。この礁の南東側に乗揚船がある。

錨地　この礁の北端沖合約 0.2M の水深 37m の所に得られるが、この付近の出州上では、激しい急潮が発生する。

Ardasier Bk.（7° 45′ N 114° 15′ E）は、Barque Canada Rf. の東南東方約 62M にある南西／北東に延びる長さ約 37M の浅堆（水深 3.7～18.3m）で、堆縁には 3 灯浮標（特殊標識、レーコン付設）がある。

第２節　南東側海域

（関係海図　　日本海図 W1801　　英国海図 3483　　米国海図 93044、93045、93046、93047）

Templer Bk.（11° 05′ N 117° 17′ E）は Reed Tablemount（Reed Bk.）の東側にある楕円形の堆（南北の長さ約 9M、東西の長さ約 5M）で、南東端付近の最小水深は 2.7m である。

Leslie Bk.（11° 04′ N 117° 27′ E）は Templer Bk. の東方約 6M にあるほぼ円形の堆（半径約 2M）で、最小水深は 16.5m である。

Sandy Sh.（11° 02′ N 117° 39′ E）は Leslie Bk. の東南東方約 9M にあるが、その位置は疑わしい。

Brown Bk.（10° 42′ N 117° 20′ E）は Leslie Bk. の南南西方約 20M にある西側の限界が決まっていない堆で、最浅部は南東端付近の最小水深 8.2m である。

Wood Bk.（10° 40′ N 117° 09′ E）は Brown Bk. の南西方約 10M にある最小水深 10.5m の堆である。

Southern Bk.（10° 30′ N 116° 40′ E）は Wood Bk. の南西方約 25M にあり、水深 10m 未満の幾つかの離礁のある堆である。

Carnatic Sh.（10° 07′ N 117° 21′ E）は水深 6.4m の位置の疑わしい浅瀬である。

Sabina Sh.（9° 45′ N 116° 28′ E）は精測されていない礁で、東側半分には多数の洗礁があり、西側半分は水深 3.7～18.3m の礁湖を取囲む洗礁から成っている。

錨地　Sabina Sh. は急深であるが、堆の縁辺の水深 9m 未満の所に得られる。この錨地では荒天時の風浪を防ぐことができない。

Royal Captain Sh.（9° 02′ N 116° 39′ E）は Palawan 西岸の Palawan Passage 南口付近の西方にあるさんご礁で、Dangerous Ground の南東端にあたる。浅瀬の北西角には目立つ干出岩が幾つかあり、乗揚げ船が西側にある。ここでは錨地が得られない。

Half Moon Sh.（8° 52′ N 116° 16′ E）は Royal Captain Sh. の西南西方約 25M にある礁湖（平均水深約 27m）を取囲む狭い洗礁から成っている。

Commodore Rf.（8° 21′ N 115° 12′ E）は海図記載位置の東方約 2M にあるという。この礁はほぼ全周にわたって干出する環礁で、2 つの礁湖を取囲んでおり、両礁湖間の狭部に低い砂小島がある。

Investigator Sh.（8° 10′ N 114° 40′ E）は Commodore Rf. の西南西方約 25M にある不規則な形の環礁である。このサンゴ礁は所々干出するが、大部分は水深 5～15m である。

礁の西端にある幾つかの孤立岩は、高潮時でも視認できる。塔が礁の西端から約 4M の所にあり、灯浮標（特殊標識、レーコン付設）が塔の東北東方約 10M 及び東方約 14M の所にある。

錨地　礁の西端の沖合約 2M の水深 46m の所に得られる。

第5章　Dangerous Ground 周辺の諸島及び諸礁

第1節　Dangerous Ground 南西方の諸島及び諸礁

（関係海図　日本海図 W1502、W1801　英国海図 3483　米国海図 93045、93046、93047）

Amboyna Cay（高さ 2m）（7° 54′ N 112° 55′ E）は Barque Canada Rf. の南西方約 30M にある小島で、2 つの部分から成っている。Amboyna Cay 灯台（黄色塔形、灯高 22m、レーコン付設、F2825.18）がある。

錨地　南西季節風期には、小島から北東方へ延びる礁上（水深 9m）に、風波を防ぐ錨地が得られる。好錨地が、この小島の中央を針路 224°、距離約 1M に見る水深 15m の所に得られる。

潮流　Amboyna Cay の付近では上げ潮流は北方へ、下げ潮流は西方へ最強流速 1.5kn で流れる潮流が観測されている。

Rifleman Bk.（最大幅約 15M）（7° 45′ N　111° 40′ E）は、Amboyna Cay の西方約 70M にある。

Bombay Castle（水深 3.2m）（7° 56′ N　111° 42′ E）はこの堆の最も浅い部分で、北端付近にある。

ここでは、好天時を除き破浪する。この堆の南南東方約 4M の礁上に灯台（灯高 22m、F2825.19）がある。

Johnson Patch（水深 7.3m）（7° 47′ N　111° 34′ E）は Rifleman Bk. の西側にあり、堆の南端及び東側には **Kingston Sh.**（水深 11m）（7° 34′ N　111° 33′ E）及び **Orleana Sh.**（水深 8.2m）（7° 43′ N　111° 45′ E）がある。

Prince of Wales Bk.（最小水深 7.3m）（8° 08′ N　110° 27′ E）は Johnson Patch の西北西方約 70M にあるサンゴ堆で、水深は非常に不規則である。

Alexandra Bk.（最小水深 5.4m）は Prince of Wales Bk. の南東方約 2M にあり、海底のサンゴが周囲と際立って見える。これらの堆には開発台があり、灯台（灯高 22m、F2825.196）が設置されている。

Grainger Bk.（最小水深 10.9m）は Alexandra Bk. の南南西方約 13M にあるサンゴ堆で、開発台があり灯台（灯高 22m、F2825.194）が設置されている。

Prince Consort Bk.（最小水深 18.2m）（7° 53′ N　110° 00′ E）は Grainger Bk. の西北西方約 22M にある砂とサンゴから成る堆で、開発台があり灯台（灯高 22m、F2825.195）が設置されている。

Vanguard Bk.（最小水深 16.5m）は、Prince Consort Bk. の南西方約 20M の主航路の南東方約 60M にある堆で、開発台が 2 基あり、それぞれに灯台（灯高 22m、F2825.192、193）が設置されている。

Charlotte Bk.（最小水深 8.7m）（7° 08′ N　107° 35′ E）は、主航路の北西方約 25M にある堆で、この堆の西北西方約 8M に浅水域（最小水深 21.5m）があるという。

Scawfell Sh.（水深 9.1m）（7° 19′ N　106° 51′ E）は Chalotte Bk. の西北西方約 45M にある浅瀬で、変色水も急潮もないので識別できないという。

第２節　Dangerous Ground 南方の諸島及び諸礁

（関係海図　　日本海図 W1502、W1801　　英国海図 3483　　米国海図 93046、93047）

Swallow Rf.（P. Layang-Layang）（7° 24′ N　113° 49′ E）は Dangerous Ground 南境界線の南方至近にある環礁で、南側に礁湖に通じる入口が 2 か所ある。

この礁の東端に Batuan Rks.（高さ 2～3m）があり、岩上に灯台（灰色塔形、灯高 8m、F2825.2）がある。

この礁の南東側に人工島（長さ約 0.65M）があり、滑走路と観光客用の建物が建設されている。

Terusan Timur は礁湖へ通じる東側の入口（幅約 90m、水深 4.8～7m）で、人工島の西方至近にあり立標で表示されている。

また Lima 導灯の 2 灯一線（000°）は Terusan Timur を通って礁の北方へ導いている。

導灯　　前灯（F2825.22）　　後灯（F2825.24）、前灯の北方約 330m

Royal Charlotte Rf.（6° 56′ N　113° 35′ E）は Swallow Rf. の南南西約 28M にあり、群石（高さ 1.2m）及び洗岩から成る長さ約 1M のほぼ長方形をした礁である。険悪地がこの礁から北北東方へ約 8M 延びており、更に北西方及び北東方へ延びているという。また、この礁上では破浪しているという。

礁の東側に灯台（灰色塔形、灯高 8m、F2825.3）がある。

Louisa Rf.（高さ 0.9m）（6° 20′ N　113° 14′ E）は Royal Charlotte Rf. の南南西約 40M にあるサンゴ礁である。礁上に灯台（灰色塔形、灯高 8m、F2825.4）がある。

潮流　　Louisa Rf.の周辺では 10 月の大潮期に、西北西方へ流れる潮流が観測されている。

第6章　Vinh Bac Bo

概要　**Vinh Bac Bo**〔中国名 Beibu G. 北部湾〕は、東側を中国の Leizhou Bandao 雷州半島及び Hainan Dao 海南島の各西岸に、北側を中国本土の沿岸に、更に西側と南側をベトナム本土の沿岸に囲まれている。

Hainan Dao 南西端とその南西方のベトナム本土との間の湾口の幅は 120M 以上である。

湾奥北西部には多数の小島と浅瀬があり、また、**Song Ca**（Red R.）の広大な三角州が広がっている。

水深　Vinh Bac Bo の水深は全体的に浅く、湾口中央付近で約 100m である。水深は沿岸に向かって浅くなり、北部海域では平均 55m 未満である。海底はおおむね軟泥で錨泊に適している。堆に似た広大な泥水域が時々見られるが、調査結果をみると深水深であることが多い。

湾の北東部は浅く、本土から距岸 25M 以内ではおおむね水深 18m 以下である。

Hainan Dao 西岸及び北岸を縁取る堆及び浅瀬以外にも暗礁が 20m 等深線の内側及びその付近にある。

規則　第 1 編を参照されたい。

漁業用杭　Vinh Bac Bo では 30M 沖合まで魚釣り用杭に遭遇する。杭は数本の長い竹竿でできており、大きな石の錨と旗が取付けられている。通常、この杭には通船が係留されているので、船舶は竹竿と通船との間を通航してはならない。

旧機雷敷設区域　旧機雷敷設に関しては第 1 編を参照されたい。

季節風　この海域では北東季節風は弱く、この時期の初期と終期には東寄りの風が多い。

区　分	月	風向及び特徴	記　事
北東季節風期（10～3 月）	10	北東～東風	北部より南部で強い
	11～2	風力 4 程度の北東風	
南西季節風期（4～9 月）	7～8	南西風	平均風力は 3 程度
	9	風向は一定しない	

霧　この海域では 2～4 月に 5%以下の霧日数が観測されているが、その他の期間には殆ど発生しない。

海流　北東季節風期には流速 0.5～3kn の西流が、Leizhou Bandao と Hainan Dao との間の Qiongzhou Haixia 琼州海峡から Vinh Bac Bo〔Beibu G.〕に流入する。この海流はこの時期、湾の北部で流速 2kn に達することがある。11～5 月の間、Hon Dau（20° 40′ N　106° 48′ E）から Mui Da Nang（16° 08′ N　108° 20′ E）までのベトナム沿岸付近では、北西流及び北流があり、平均流速 0.5kn から時には 2kn となる。また、この海流は湾中央の広い海域を流れる南流及び南東流に相殺されると考えられているが、その変動は大きい。

6～8 月の海流は変化が大きいが、ベトナム沿岸では、左回りの南流及び南東流が卓越すると思われる。流速は滅多に 1kn を超えない。

潮流　Vinh Bac Bo 西岸沖合では、上げ潮流は流速約 1kn で北方へ、下げ潮流は流速約 1.5kn で南方へ流れる。

第 1 節　Baixugong Jiao 白須公礁 ～ Quang Ninh P.

（関係海図　日本海図 W1501　英国海図 1965、3990　米国海図 93620、93626、93629、93650）

Vinh Bac Bo 北岸の沿岸航路は、**Baixugong Jiao 白須公礁**（21° 23′ N　108° 12′ E）｛中国｝の南南東方

Annex 235

United Kingdom Hydrographic Office, *Admiralty Sailing Directions: China Sea Pilot (NP31)*, Vol. 2 (10th ed., 2012)

NP31

ADMIRALTY SAILING DIRECTIONS

CHINA SEA PILOT VOLUME 2

The north-western coast of Borneo, Philippine Islands from Cape Buliluyan in Palawan to Cape Bojeador in Luzon, and the islands and dangers in the southern and eastern parts of South China Sea

TENTH EDITION
2012

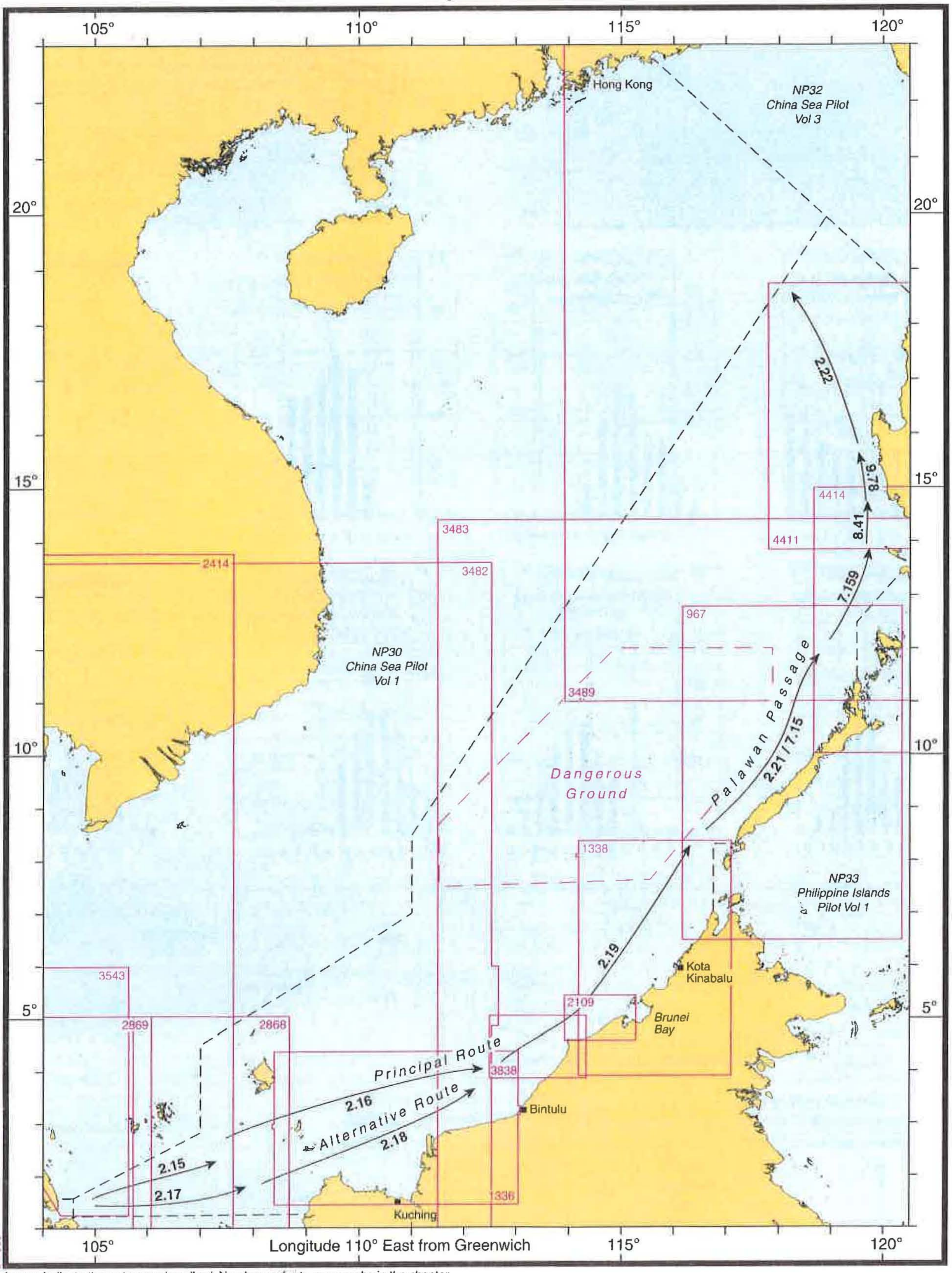
IMPORTANT - SEE RELATED ADMIRALTY PUBLICATIONS

Notices to Mariners (Annual, Permanent, Preliminary and Temporary); **NP5011** (Symbols and abbreviations); **The Mariner's Handbook** (especially Chapters 1 and 2 on the use, accuracy and limitations of charts); **Sailing Directions** (Pilots); **List of Lights and Fog Signals; List of Radio Signals; Tide Tables** (or their digital equivalents).

KEEP CHARTS AND PUBLICATIONS UP TO DATE AND USE THE LARGEST SCALE CHART APPROPRIATE

PUBLISHED BY THE UNITED KINGDOM HYDROGRAPHIC OFFICE

Chapter 2 - Singapore to Hong Kong for low-powered vessels and Dangerous Ground



Arrows indicate the waterway described. Numbers refer to paragraphs in the chapter

CHAPTER 2

ROUTES FROM SINGAPORE TO HONG KONG FOR LOW-POWERED VESSELS, AND THE OFFSHORE DANGERS, INCLUDING DANGEROUS GROUND AND OFFSHORE REEFS AND BANKS SOUTH OF, AND NORTH OF, DANGEROUS GROUND BETWEEN SARAWAK AND THE WEST COAST OF LUZON

GENERAL INFORMATION

Chart 4508

Scope of the chapter

2.1

1 The chapter is arranged as follows:

Main route from Singapore to Hong Kong for low-powered vessels (2.8).

Offshore reefs, banks and shoals south of Dangerous Ground (2.23).

Dangerous Ground (2.50).

Offshore reefs, banks and shoals north of Dangerous Ground (2.130).

The first section describes the route between Singapore Strait and Hong Kong for low-powered vessels during the NE monsoon. The larger portion of this route lies within the area covered by this pilot.

2 For information concerning inshore reefs, banks and shoals, which are not covered in this chapter, see the chapter of this book relevant to the area in which they are charted.

Routes

2.2

1 **Ocean passages.** For details about ocean passages through South China Sea, see *Ocean Passages for the World* and appropriate routeing charts.

2 **Archipelagic Sea Lanes** are established as follows:

ASL 1. Between Pulau-Pulau Natuna Besar (3.46) and Pulau-Pulau Subi Besar (3.76). This lane also continues SSE from Beting Tohor (3.19).

ASL 1A. Between Beting Tohor and the E entrance to Singapore Strait.

For further details see 1.8, Appendix I and *The Mariner's Handbook*.

3 **Routes.** When proceeding through the E part of South China Sea the following common routes may be followed:

NE\SW route via Palawan Passage. This route (2.8) follows the E coasts of South China Sea. It also provides E-bound vessels access to Balabac Strait (see 6.64 and *Philippine Islands Pilot*), Mindoro Strait (see 7.161 and *Philippine Islands Pilot*), and Verde Island Passage (see 8.28, 8.29, 8.46 and *Philippine Islands Pilot*). This route may be preferred by low-powered vessels bound NE\SW during the NE monsoon.

4 **Other NE\SW routes** lead W or clear of Prince Consort Bank (see *China Sea Pilot Volume 1*), W of Dangerous Ground (see 2.23, 2.50 and 2.130), NW of North Danger Reef (2.125) to Mindoro Strait, Verde Island Passage or W of Scarborough Reef (2.136) to Luzon Strait (Babuyan Channel, Balintang Channel or Bashi Channel) (See *China Sea Pilot Volume 3*).

5 NNW\SSE routes in South China Sea lead to major ports; ASL1; Balabac Strait; Mindoro Strait; Verde Island Passage.

Positions

2.3

1 **Charted positions.** Positions on some charts in this chapter differ from other charts in the area by varying amounts, and positions should be transferred between charts by bearing and distance from common charted objects, see note on charts.

Submarine exercise area

2.4

1 There is an established submarine exercise area NE of the E end of Singapore Strait, centred upon 1°45′·00N 105°00′·00E.

Caution

2.5

1 Uncharted coral pinnacles may exist. See 1.3 for information concerning navigation in areas where coral grows.

Piracy

2.6

1 Several incidents of piracy and armed robbery have been reported in South China Sea since 2005, including in the area of Spratly Island and NW of Borneo. See 1.96.

Oil and gas offshore fields

2.7

1 Many major oil and gas fields, with associated oil and gas pipelines, lie well offshore from the coasts of Sarawak, Brunei and Sabah; the routes in this chapter are mainly offshore of these fields, but some fields are farther N. Many platforms, but not all, are marked by lights, and some with racons. Details are shown on the chart.

For regulations concerning these fields see 1.17 and 1.55.

ROUTE FROM SINGAPORE TO HONG KONG FOR LOW-POWERED VESSELS

General information

Charts 3482, 3483, 3489, 4508

Scope of the section

2.8

1 Whilst the route described in this section is referred to as a route for low-powered vessels making passage between Singapore Strait (1°25′·00N 104°34′·00E) and Hong Kong (22°17′·00N 114°09′·00E) during the NE monsoon, it is also used, in full or in part, by other categories of vessel, at any time.

2 For information concerning other routes, and on passages in and through South China Sea, see 2.130 and *Ocean Passages for the World.* Directions for Singapore Strait are described in *Malacca Strait and West Coast of Sumatera Pilot.*

Route

2.9

1 **Principal route.** From Singapore Strait the principal route for low-powered vessels leads N of Pulau Subi Kecil (3°02′·14N 108°51′·10E) to position 4°00′·00N 112°32′·00E, thence, via Palawan Passage (10°00′·00N 118°00′·00E), N to Caiman Point (15°54′·94N 119°46′·37E) on the W coast of Luzon. There it diverges from the coast on a NW track to Hong Kong.

2 **Alternative route.** There is an alternative, more S route, for low-powered vessels, for that part of the passage between Singapore Strait and position 4°00′·00N 112°32′·00E. This alternative route leads S of Pulau Kayuara (1°31′·84N 106°26′·67E) and through Alur Pelayaran Api (2°00′·00N 109°10′·00E).

The choice of initial route makes little difference to the total distance of 1925 miles.

Natural conditions

2.10

1 For the main weather and current systems which prevail in the area see 1.163 and 1.148.

See the relevant chapters of this book for information particular to an area.

Caution. Currents, particularly off the coast of Sabah and in Palawan Passage, between latitudes 2°00′·00N and 11°00′·00N, are unpredictable and may be dangerous.

Directions - general

Principal marks

2.11

1 **Landmarks and major lights.** With the exception of those lights listed below, the landmarks and major lights available for the route are those available for the coastal passages, and are described in the text of the appropriate chapter.

Major lights:

2 Tanjung Sirik Light (2°46′·85N 111°19′·33E) (4.73).

Central Luconia Gas Field Light (Platform E 11DP-A, racon) (4°20′·07N 112°40′·94E).

Tanjung Baram Light (4°35′·69N 113°58′·63E) (4.217).

Fairley Oil Field Light (4°57′·03N 114°04′·20E) (5.14).

Other aids to navigation

2.12

1 **Racons:**

Central Luconia Oil Field Light (4°20′·07N 112°40′·94E).

Fairley Oil Field Light (4°57·03′N 114°04′·20E).

For details see *Admiralty List of Radio Signals Volume 2.*

General information

2.13

1 The route between Singapore Strait and Hong Kong for low-powered vessels is described here in its entirety. However, because that route coincides in part with coastal passages described in detail elsewhere in this book, reference is made to those passages where appropriate, and these directions describe those parts of the route in broad outline only.

2 Where the route does not coincide with a coastal passage, the salient features close to the route are referred to here; the mariner should consult the relevant chapter of this book for particulars of the remainder of the area through which he is to navigate. For ease of reference, where appropriate, the relevant chapters are indicated in the text of these directions.

Directions - Singapore Strait to position 4°00′·00N 112°32′·00E

Charts 2403, 2869, 2868, 1336 (Timb48)

2.14

1 From the E end of Singapore Strait passage is via either the principal or alternative route (2.17) to the vicinity of position 4°00′·00N 112°32′·00E.

Principal route

2.15

1 From Singapore Strait (1°25′·00N 104°34′·00E) to the vicinity of position 4°00′·00N 112°32′·00E, the principal route leads ENE in two parts. The first part leads from Singapore Strait to N of Pulau Subi Kecil (3°02′·14N 108°51′·10E) (3.78), and is described at 3.8 to 3.18, and 3.94.

2.16

(continued from 3.94)

1 The second part, from N of Pulau Subi Kecil (3.78) to the vicinity of position 4°00′·00N 112°32′·00E, follows the coast of Sarawak, passing:

NNW of a dangerous wreck (3°02′·26N 109°16′·09E), thence:

SSE of an obstruction where gas has been reported to be seen (3°51′·56N 109°48′·02E), thence:

SSE of a dangerous wreck (3°46′·96N 110°50′·22E), position approximate, thence:

Clear of a dangerous wreck (3°39′·00N 111°03′·31E).

2 East of longitude 112°00′·00E, as may best be seen on the chart, there are numerous shoals and offshore oil and gas installations (4.8). Closest to the track are D35 Oil Field (3°46·62′N 112°04′·05E), Beting Mukah (Lydie Shoal) (3°51′·42N 112°03′·21E), Beting Tugau (Parsons Shoal) (3°53′·04N 112°16′·33E), Beting Serupai (James Shoal) (3°58′·11N 112°16′·63E) and E8DR-A platform (4°08′·13N 112°21′·42E). The latter shoals, and others E of them, are described at 4.213. The coast of

Sarawak is described, and coastal directions given, in Chapter 4.

(Directions continue at 2.19)
(Directions for deep-water route to Pelabuhan Bintulu are given at 4.192)

Alternative route

2.17

1 From Singapore Strait (1°25'·00N 104°34'·00E), the alternative route leads E then ENE, in three parts, to the vicinity of 4°00'·00N 112°32'·00E. The first part, to close S of Pulau Kayuara (1°31'·84N 106°26'·67E), and the second part, S of Pulau Muri (1°54'·16N 108°38'·91E), thence via Alur Pelayaran Api to a position N of Tanjung Datu (2°05'·01N 109°38'·31E), are described at 3.8 to 3.17, 3.19 and 3.118.

2.18

(continued from 3.119)

1 From N of Tanjung Datu (3.118) the third part of the alternative route leads ENE to the vicinity of position 4°00'·00N 112°32'·00E, passing:

Clear of two dangerous wrecks (2°29'·03N 109°59'·98E) and 4 miles SE, thence:

2 Clear of a wreck, depth 23 m, (2°58'·61N 110°29'·31E), thence:

NNW of Tanjung Sirik (2°46'·85N 111°19'·33E), distant 24 miles. A light (4.73) is exhibited from this point. Thence:

3 To the vicinity of 4°00'·00N 112°32'·00E. As may best be seen on the chart, several dangerous wrecks lie inshore of this section of the track, and E of longitude 112°00'·00E there are numerous shoals and offshore oil and gas installations (4.8). Beting Tugau (Parsons Shoal) (3°53'·04N 112°16'·33E) (4.213) lies close N of the track, whilst others, described at 4.215 and 4.216, are inshore. The coast of Sarawak is described, and coastal directions given, in Chapter 4.

(Directions continue at 2.19)
(Directions for deep-water route to Pelabuhan Bintulu are given at 4.192)

Directions - Position 4°00'·00N 112°32'·00E to Hong Kong

Charts 3838, 2109, 1338, 3483 (undetermined datum)

Position 4°00'·00N 112°32'·00E to Palawan Passage

(continued from 2.16 and 2.18)

2.19

1 **Principal marks and other aids to navigation** along this section of the route, in addition to those referred to here, are given at 2.11, 5.14, 6.24 and 6.82.

2.20

1 **Route.** From the vicinity of position 4°00'·00N 112°32'·00E, where the principal and alternative routes merge, the route continues NE to the S end of Palawan Passage, through an area where there is much offshore oil and gas industry activity, and where marine farms (1.12) may be encountered, passing:

2 SE of Central Luconia Gas Field (4°20'·07N 112°40'·94E), thence:

To a position NW of Betty Field (4°36'·56N 113°38'·75E) (4.220).

(Directions for Miri and Lutong Terminal are given at 4.240)

3 The route continues NE, passing:

NW of Baronia Oil Field (4°44'·51N 113°44'·55E) (4.220), thence:

NNW of Tanjung Baram (4°35'·69N 113°58'·63E) (4.161), distant 22 miles, from where a light (4.217) is exhibited.

(Directions for the offshore route to the approaches to Brunei Bay continue at 5.14)

4 The route continues NE to the vicinity of position 5°03'·00N 114°00'·00E, thence:

NW of Gannet Oil Field (5°00'·66N 114°02'·40E) (5.16), thence:

NW of Magpie Oil Field (5°06'·01N 114°27'·02E) (5.15), thence:

SE of the ammunition dumping ground (5°33'·18N 114°07'·68E), thence:

SE of an entry restricted area surrounding Kikeh Oil Field storage tanker (5°52'·57N 114°17'·55E) and a platform (lit) 1 mile S; see also 1.17. Thence:

SE of Gumusut Oil Field (5°49'·55N 114°23'·09E), thence:

5 NW of Maharaja Lela Oil Field (5°23'·76N 114°40'·88E) (5.16), thence:

NW of Samarang Bank (5°35'·19N 114°53'·65E) and Samarang Oilfield (6.16), thence:

NW of Vernon Bank (5°45'·46N 115°02'·17E) (6.17), thence:

6 NW of Saracen Bank (6°07'·52N 115°22'·60E) (6.70), thence:

NW of ERB West Oilfield (W platform) (6°21'·50N 115°18'·40E) (6.74), thence:

NW of Tembungo Oil Terminal (disused) (6°37'·12N 115°47'·35E) (6.75), thence:

NW of Emerald Shoals (6°57'·36N 116°08'·06E) (6.78), thence:

7 NW of Big Bonanza Shoal (7°05'·60N 116°25'·04E) (6.80), thence:

NW of the W end of Balabac Strait (7°40'·00N 117°00'·00E) (6.64), thence:

Clear of a 23·5 m isolated shoal (reported 1965) (8°13'·23N 116°35'·97E). Thence:

The route continues NE to approximate position 8°20'·00N 116°35'·00E, the S limit of Palawan Passage.

Charts 967, 3807, 3806, 3489 (undetermined datum)

Palawan Passage to Caiman Point

2.21

1 From approximate position 8°20'·00N 116°35'·00E, the S limit of Palawan Passage, the route leads generally NE then NNE through Palawan Passage (Chapter 7), and to a position W of Lubang Islands (13°46'·96N 120°10'·72E) (Chapter 8), thence N and NNW, along the W coast of Luzon (Chapter 9), until diverging from the coast off Caiman Point (15°54'·94N 119°46'·37E).

2 This section of the route is described in the ensuing chapters as follows:

Palawan Passage, from its S limit in approximate position 8°20'·00N 116°35'·00E to a position NW of Cape Calavite (13°26'·77N 120°18'·00E), from 7.15 to 7.24, thence from 7.159 to 7.161. Thence:

3 W of Lubang Islands to a position WSW of Cochinos Point (14°24'·48N 120°30'·00E), from 8.41 to 8.45. Thence:

Offshore the W coast of Luzon from WSW of Cochinos Point to a position off Caiman Point

(15°54′·94N 119°46′·37E), from 9.5 to 9.11, thence from 9.71 to 9.79.

Charts 3806, 3489 (undetermined datum)
Caiman Point to Hong Kong
(continued from 2.21 and 9.79)
2.22
1 Off Caiman Point (15°54′·94N 119°46′·37E), the route diverges from the coastal route and continues NNW then NW towards Hong Kong, reaching the W limit of this book having travelled a further 190 miles, passing.
2 ENE of Stewart Bank (17°10′·22N 118°37′·80E) (2.138). Thence:
On a direct route, in deep water, towards Hong Kong, crossing the W limit of this book in approximate position 18°40′·00N 118°00′·00E.
(Directions continue in China Sea Pilot Volume 1)

OFFSHORE REEFS, BANKS AND SHOALS SOUTH OF DANGEROUS GROUND

General information

Charts 3482, 3483 (undetermined datum)
Scope of the section
2.23
1 In this section are described the reefs, banks, shoals and other dangers known to exist offshore in the sea area N of latitude 4°00′·00N and S of the S boundary (latitude 7°30′·00N) of Dangerous Ground (10°00′·00N 115°00′·00E), shown on the chart, and E of 109°00′·00E.

Depths
2.24
1 The seabed in the area in which the shoals are situated is uneven, with no clearly defined pattern apparent. The bottom is mainly mud.
Throughout the area, seabed depths range from 100 m in the S to more than 2000 m in the N. The reefs and shoals rise precipitously from the seabed. In addition to the shoals noted below the following isolated depths of less than 50 m are charted:
2 34 m in 5°37′·40N 110°01′·64E;
44 m in 5°43′·54N 110°20′·65E;
42 m in 5°05′·43N 111°43′·79E;
10 m in 7°20′·39N 111°41′·80E;
reported (2010) 6°59′·92N 111°52′·55E.
For depths throughout the area, the chart is the best guide.
Much of the area has not been systematically surveyed to modern standards, and the existence of uncharted shoals and coral patches can not be discounted, see note on chart.

Marine exploitation
2.25
1 Oil exploration and drilling operations take place in this area, see 1.16.

Oil and gas platforms
2.26

1

Name	*Position*
M3PQ-A	5°08′·91N 111°48′·74E
M1DR-A	5°22′·66N 111°51′·72E
M 4	5°12′·89N 111°46′·43E

Hazards
2.27
1 **Escaping gas** has been reported in position 5°32′·93N 109°12′·56E.

Flow
2.28
1 For general information concerning tidal streams and currents in the area see 1.155 and 1.148.
Findings from observations of tides and currents relevant to a specific feature are given with that feature.

Marine farms
2.29
1 Marine farms abound in the area. For further information see 1.12.

South Luconia Shoals

Charts 3838, 3483 (undetermined datum)
General information
2.30
1 South Luconia Shoals (5°00′·00N 112°37′·31E), known to the Malaysians as Gugusan Beting Patinggi Ali, are a number of steep-to coral reefs. The sea breaks over them in places and they can usually be seen from aloft.

Caution
2.31
1 The area between the known South Luconia Shoals has not been examined and other shoals may exist. The charted positions of South Luconia and Comus Shoals (2.37) could be in error by many miles.
Less water has been reported (2006) in the area.

Connell Reef
2.32
1 Connell Reef, on which lies a stranded wreck (5°05′·10N 112°34′·85E), has depths of 1·8 to 8·2 m. There is a 16·5 m patch and a 5·5 m patch lying 4 miles E and 2 miles S, respectively, from Connell Reef.

Stigant Reef
2.33
1 Stigant Reef (5°02′·16N 112°28′·58E), is horseshoe-shaped, with depths of 4·6 to 11 m.

Herald Reef
2.34
1 Herald Reef (4°58′·87N 112°37′·13E) is a small atoll reef 4 cables in diameter, with reported depths of less than 2 m over the reef. The reef is steep-to and there is little surface indication of its presence.

Luconia Breakers
2.35
1 Luconia Breakers (5°01′·26N 112°39′·44E), which dries and on which the sea breaks heavily.

Richmond Reef
2.36
1 Richmond Reef (5°03′·36N 112°40′·58E) is a ridge, 2 miles long in a NNE to SSW direction, with a least known depth near its centre of 4·9 m.

Comus Shoal

2.37
1 Comus Shoal (5°02′·20N 112°55′·95E), coral, with a depth of 4·6 m. See also caution at 2.31.

North Luconia Shoals

Chart 3483 (undetermined datum)
General information
2.38
1 North Luconia Shoals (5°43′·28N 112°27′·52E), known to the Malaysians as Gugusan Beting Raja Jarom, were partly examined in 1866 by HMS *Rifleman*, and in 1935 by HM Surveying Ship *Herald*. They were found to consist of a great number of coral reefs and shoals.

Caution
2.39
1 Apart from the named shoals there are many other detached coral reefs, small drying patches and dangerous reefs, shown on the chart, some of which are unexamined, which also form part of North Luconia Shoals, and over many of which the sea breaks heavily. There is no safe passage between them.

The channel between North Luconia Shoals and South Luconia Shoals, and the area W of the former, has not been examined.

Hayes Reef
2.40
1 Hayes Reef, the S charted reef (5°22′·95N 112°37′·97E), over which the sea breaks heavily in all weathers, is a small, steep-to reef, which dries.

Seahorse Breakers
2.41
1 Seahorse Breakers (5°30′·12N 112°35′·85E), are steep-to on their E side, and have depths of less than 2 m.

Tripp Reef
2.42
1 Tripp Reef (5°28′·29N 112°31′·22E), has a least known depth of 3·7 m.

Moody Reef
2.43
1 Moody Reef (5°37′·24N 112°23′·12E) has a depth of 9·1 m.

Friendship Shoal
2.44
1 Friendship Shoal (5°57′·43N 112°33′·86E) is known locally as Beting Rentap. The shoal has a least known depth of 9·6 m, but shoaler water may be found. In 1963 this shoal was reported to lie 3 miles W of its charted position.

East side reefs
2.45
1 Aitken Reef (5°53′·30N 112°32′·54E), depth 2·9 m, lies close S of Friendship Shoal (2.44). Buck Reef, least known depth 5 m, and Beian Reef, least depth 3·7 m, lie S of Aitken Reef.

Hardie Reef
2.46
1 Hardie Reef (5°46′·84N 112°27′·91E) extends for 10 miles on a N-S axis. It has depths of 7·3 to 18·2 m.

Other named reefs, banks and shoals

Louisa Reef
2.47
1 Louisa Reef (6°20′·00N 113°14′·40E) is composed of coral and is 0·9 m high. Depths of not less than 100 m lie close to it. A light (grey triangular concrete tower) is exhibited from the reef.

Tidal stream. In October the tidal stream was observed to be setting WNW near Louisa Reef, on days of full or new moon.

Royal Charlotte Reef
2.48
1 Royal Charlotte Reef (6°56′·70N 113°36′·00E) is nearly rectangular in shape, with some boulders 1·2 m high near its SE end, and some rocks awash on its NE side. Foul ground extends 8 miles NNE from the reef, and in 1972 it was reported that foul ground also extended to the NW and NE. Breakers have been observed over the reef. A light (grey triangular concrete tower) is exhibited from the reef.

Chart 3483 (undetermined datum)
Swallow Reef
2.49
1 Swallow Reef (7°22′·95N 113°48′·84E), known to the Malaysians as Pulau Layang-Layang, lies close S of the S border of Dangerous Ground. It is formed by a narrow belt of coral surrounding a lagoon with 2 entrances on the S side. At the E end of the reef lie Batuan Rocks, 2 to 3 m high, and a light (grey triangular concrete tower).

2 On the SE side of the reef, an artificial island, 6½ cables in length, has been constructed. An airport runway, the buildings of a tourist resort and a naval base are situated on the island.

Terusan Timur, the E entrance into the lagoon, is close W of the island It is ½ cable wide, with depths of 4·8 to 7 m, and marked by light beacons (lateral). The alignment (000°) of leading lights on the N reef leads through Terusan Timur. A light buoy (port hand) is moored off W edge of reef.

3 Depths in the central area of the lagoon range from 2 to 15 m with numerous coral pinnacles. A stranded wreck lies on the S side of the reef.

Berths. On the NE side of the artificial island is a pier 35 m in length; mooring buoys are located in the lagoon.

In 1986 the reef was reported to be larger in area than charted; it is marked by breakers.

DANGEROUS GROUND

GENERAL INFORMATION

Chart 3483 (undetermined datum)

Scope of the section

2.50

1 In this section are described the hazards known to exist in Dangerous Ground, which, as may best be seen on the chart, is the E half of South China Sea bounded in the N by latitude 12°00′·00N; in the S by latitude 7°30′·00N; and in the E by Palawan Trough and Palawan Passage (7.15).

The section is divided into four parts for descriptive purposes, each part being comprised of that portion of Dangerous Ground which lies within each quadrant of the compass, centred upon position 10°00′·00N 115°00′·00E, and reading from SE to NE, and from SW to NW.

Topography

2.51

1 The area known as Dangerous Ground is an extensive reef plateau from which rise many reefs and islands, and upon which numerous banks and shoals are found.

Depths

2.52

1 Although often represented as a shallow region, probably because of the number of reefs, shoals and banks to be found there, the Dangerous Ground plateau is, in fact, deep and level, with depths of between 1100 m and 3000 m.

The seabed is composed mainly of soft mud or ooze, with some patches of sand, rock and coral.

Much of the area has not been systematically surveyed to modern standards, and the existence of uncharted shoals and coral patches can not be discounted, see note on chart.

Flow

2.53

1 For general remarks on tides, tidal streams and currents see 1.155 and 1.148.

The findings from observations of tides and currents relevant to a specific feature within Dangerous Ground are given with that feature.

Major lights

2.54

1 Amboyna Cay Light (grey round tower on building, 25 m in height) (7°53′·49N 112°55′·17E).

Ladd Reef Light (white metal framework tower, red bands on piles) (8°40′·02N 111°39′·83E).

West Reef Light (grey round masonry tower on building, 20 m in height) (8°50′·68N 112°11′·70E).

Tennent Reef Light (white 8-sided tower on building, 22 m in height) (8°52′·27N 114°40′·85E).

North Danger Light (11°25′·72N 114°19′·83E) (2.125).

2 Fiery Cross Reef Light (white octagonal concrete tower, 32 m in height) (9°33′·30N 112°54′·15E).

Aids to navigation

2.55

1 **Racons:**

Investigator Shoal No 1 Light Buoy (special) (8°09′·53N 114°43′·71E).

Investigator Shoal No 2 Light Buoy (special) (8°07′·17N 114°47′·99E).

Ardasier Bank No 3 Light Buoy (special) (7°56′·61N 114°26′·27E).

Amboyna Cay Light (7°53′·49N 112°55′·17E).

For details see *Admiralty List of Radio Signals Volume 2.*

Caution

2.56

1 **Territorial disputes.** Sovereignty over some of the islands in Dangerous Ground is subject to competing claims, some of which may be supported by force of arms.

Dangers to navigation. No systematic surveys of Dangerous Ground have been carried out but dangers are known to abound. The existence of uncharted patches of coral and shoals is likely, and the position of the charted banks and shoals cannot be relied upon. Mariners are warned not to pass through this area.

DANGEROUS GROUND - SOUTH-EAST PART

Islands, reefs, banks and shoals

Charts 1338, 3483 (undetermined datum)

Commodore Reef

2.57

1 Commodore Reef (8°20′·95N 115°12′·32E), which has been reported to lie 2 miles E of its charted position, dries in patches around its circumference. It contains two lagoons, with a low sand cay on a neck between them. Depths in the W lagoon are 5·5 to 14·6 m, but there are groups of below-water rocks in places. The E lagoon has not been closely examined, but appears to be shallow and foul.

2 There is no anchorage in the vicinity of Commodore Reef. Boats can enter the W lagoon at HW, and in some places at LW; the best positions are 2 miles from the W end, and on the N and S sides.

A rock awash, existence doubtful, lies 3 miles ENE, and an unknown danger is charted 5 miles NW.

Charts 967, 3483 (undetermined datum)

Half Moon Shoal

2.58

1 Half Moon Shoal (8°54′·74N 116°15′·97E) consists of a belt of coral, awash, on the E side of which lies a 1 m (3 ft) high inclined rock. The belt of coral encloses a lagoon with an average depth of 27 m (15 fm), but there are several coral heads with depths of 0·3 to 5·5 m (1 to 18 ft). The entrance is 1 cable wide, with a depth of 12·8 m (42 ft), and lies 4 cables SW of the inclined rock, on the SE side of the reef.

2 There is no anchorage in the vicinity of Half Moon Shoal. The lagoon offers good shelter to small craft, but during the strength of the NE monsoon (1.144) entry might be impossible.

Royal Captain Shoal

2.59

1 Royal Captain Shoal (9°02′·52N 116°40′·26E) consists of an unbroken coral reef on which there are a few drying rocks, the most prominent of which lies on the NW corner of the reef. The outer edge of the reef is steep-to with depths greater than 183 m (100 fm) within ½ cable, and with no anchorage off it. At HW boats can cross the reef and enter the lagoon, where there are depths of from 27 to 31 m (15 to 17 fm).

2 Two stranded wrecks lie on the W side of the reef. In 1969 two dangerous rocks were reported to lie close SW of the reef.

Tidal stream. A W set of ¾ kn has been experienced in the vicinity of Royal Captain Shoal.

North East Investigator Shoal
2.60

1 North East Investigator Shoal (9°10′·47N 116°27′·92E), which dries, entirely encloses a lagoon. The lagoon is probably accessible to boats at HW.

An unnamed shoal, 5 miles WNW, on which lie 2 dangerous rocks, extends 3 miles ENE/WSW.

Bombay Shoal
2.61

1 Bombay Shoal (9°26′·03N 116°54′·02E) is steep-to, and consists of a coral reef enclosing a lagoon with depths of from 29 to 33 m (16 to 18 fm) in it. There are several drying rocks on the reef, the more prominent of which are on the NW and W parts. Madagascar Reef, which also dries, lies on the NE extremity of the coral reef forming Bombay Shoal.

2 Two stranded wrecks lie 5 cables apart on the NE side of Bombay Shoal. The S wreck, which is prominent, is a submarine which, from a distance, may look like an aircraft carrier or an islet. The N wreck is a tug which, in 1965, was reported to be breaking up.

Tidal streams in the vicinity of Bombay Shoal were observed to set NE when the tide was rising.

Chart 3483 (undetermined datum)
First Thomas Shoal
2.62

1 First Thomas Shoal (9°19′·49N 115°56′·44E), which dries, and on which there are a few rocks, encloses a shallow lagoon.

There is no anchorage in the vicinity. The lagoon is probably accessible to boats at HW.

Alicia Annie Reef
2.63

1 Alicia Annie Reef (9°22′·78N 115°26′·85E), which dries, encloses a shallow lagoon, and has numerous rocks on it which are just visible at HW. There is a small, low, white coral sand cay at its N end.

Anchorage. HM Surveying Ship *Iroquois* anchored 1 cable off the N end of the reef, in a depth of 55 m (30 fm). The lagoon is probably accessible to boats at HW.

Charts 967, 3483 (undetermined datum)
Boxall Reef
2.64

1 Boxall Reef (9°35′·58N 116°09′·50E), which dries, does not enclose a lagoon, nor are there any rocks visible at HW.

There is no anchorage in the vicinity.

Sabina Shoal
2.65

1 Sabina Shoal (9°45′·74N 116°28′·34E) has not been closely examined. The E half of the shoal is composed of a number of reefs awash. The W half consists of a bank over which there are depths of 3·7 to 18·3 m (12 to 60 ft), and reefs awash, enclosing a lagoon.

Anchorage. Sabina Shoal is steep-to, but anchorage can be found, on the edge of the bank, in depths of not more than 9 m (30 ft); however, there is no shelter in bad weather.

Chart 3483 (undetermined datum)
Second Thomas Shoal
2.66

1 Second Thomas Shoal (9°44′·10N 115°51′·98E) extends 11 miles from N to S, and encloses a lagoon in which there are depths of 27 m.

No anchorage has been found in the vicinity. The lagoon may be accessible to boats on its E side.

Mischief Reef
2.67

1 Mischief Reef (9°54′·27N 115°32′·14E), awash, but much of which dries, surrounds an extensive lagoon which has an average depth of 26 m.

There are three entrances to the lagoon, two on the S side and one on the SW side of Mischief Reef.

2 The most W of the two entrances on the S side has depths of more than 18 m; it is ½ cable wide and 1½ cables in length. The deepest water, clearly defined in good light by its deep blue colour, lies in a slight curve approximately parallel to the edge of the reef on the W side. Vessels of less than 90 m in length would have little difficulty in using this channel, although the safe width does not exceed 37 m.

3 In 1938 HM Surveying Ship *Herald* passed through this entrance under favourable conditions of light and tide, and experienced little set. However care is necessary owing to tidal streams, which may set partly across the entrance and attain a rate of 1½ kn at neaps.

The other two entrances are only boat channels.

4 The SW half of the lagoon is free from dangers and affords good shelter, but the NE part is encumbered with coral heads, most of which have depths of less than 2 m.

DANGEROUS GROUND - NORTH-EAST PART

Islands, reefs, banks and shoals

Charts 967, 3483 (undetermined datum)
Seahorse Shoal
2.68

1 Seahorse Shoal (Routh Bank) (10°47′·64N 117°46′·09E) is 8½ miles in extent from SSW to NNE. The shoalest part, near the N end of the bank, is a patch 7 cables in extent, least depth 8·2 m (27 ft). Elsewhere the least depth on the bank is 11 m (36 ft); inside the reef there are depths of from 35 to 53 m (19 to 29 fm).

This shoal is the most N of the known dangers on the W side of Palawan Passage (7.15).

Brown Bank
2.69

1 Brown Bank (10°42′·48N 117°14′·36E), the W limit of which has not been determined, has its shoalest part, least depth 8·2 m (27 ft), at its SE extremity.

Wood Bank
2.70

1 Wood Bank (10°35′·91N 117°11′·75E) has a least depth of 14·5 m (48 ft).

Southern Bank
2.71

1 Southern Bank (10°30′·81N 116°42′·79E) which extends for 36 miles from NE to SW, has several patches with depths of less than 10 m (30 ft) over them. Foulerton Reef (10°33′·12N 116°56′·32E) lies on the E extremity, with a bank with rocks extending 6 miles ENE. Little Patches (10°18′·67N 116°29′·34E), with depths of less than 10 m (30 ft), lie at the SW extremity of Southern Bank.

Chart 3483 (undetermined datum)

Hardy Reef

2.72

1 Hardy Reef (10°08′·02N 116°07′·35E) dries, and has a narrow strip of sand in the middle. There is no anchorage in the vicinity.

Southampton Reefs

2.73

1 Southampton Reefs include Livock Reef (10°11′·61N 115°17′·76E) and Hopps Reef (10°15′·56N 115°21′·90E), both of which dry. Livock Reef, to the SW, is the larger; its reef encloses a lagoon which is probably accessible to boats at high water, when a few rocks on it may be visible.

Anchorage. The only anchorage HM Surveying Ship *Iroquois* was able to obtain was 2 cables off the SE edge of Livock Reef, in a depth of 46 m.

Jackson Atoll

2.74

1 Jackson Atoll (10°30′·29N 115°45′·04E) has five drying reefs on the encircling reef which encloses a lagoon with a depth of 13·2 m. There are four main entrances to the lagoon:

The NW entrance, least depth 8·5 m, between Deane Reef in the W and Hoare Reef, 7 cables NE.

The N entrance, least depth 10·4 m, between Hoare Reef and Dickinson Reef, 2 miles E. And:

2 The N and NE entrances, least depths 16·2 and 16·8 m respectively, between Dickinson Reef and Petch Reef. The N and NE entrances are each 1¼ miles wide and are separated by Middle Shoal, least depth 7·3 m.

Anchorage. There is no shelter from bad weather, but anchorage with good holding ground, sand and coral, may be obtained anywhere within the lagoon.

Nanshan Island

2.75

1 Nanshan Island (10°44′·19N 115°48′·34E) is low, with a few coconut trees upon it.

Flat Island

2.76

1 Flat Island (10°49′·25N 115°49′·33E) is a low, flat, sandy cay, from which the fringing reef extends 2 miles SE and NE. A shallow reef extends S from it to within 1 mile of Nanshan Island, 5 miles S.

Anchorage. A large bank, with depths of 50 m, extends some 8 miles SE from the above two islands. It has not been closely examined, but may be suitable to anchor upon. There are shoal depths in places on the W edge of this bank, S of Nanshan Island.

Hopkins Reef

2.77

1 Hopkins Reef (10°49′·25N 116°05′·86E) is nearly awash, and seas break heavily on it.

Charts 967, 3483 (undetermined datum)

Amy Douglas Bank

2.78

1 Amy Douglas Bank, the N limits of which have not been determined, has Iroquois Reef (10°37′·48N 116°10′·00E) at its S extremity, 6 miles N of which lies Baker Reef (10°43′·37N 116°09′·83E), awash. Hirane Shoal (10°53′·01N 116°25′·20E), depth less than 1·8 m (6 ft), lies 18 miles NE of Baker Reef; between these two reefs there are many other shoals and reefs, and depths of less than 18 m (60 ft).

2 **Anchorage.** In 1928 HM Surveying Ship *Iroquois* anchored within the horns of Iroquois Reef.

Caution. It is strongly emphasised that, although the positions and approximate limits of numerous shoals have been determined, for all practical purposes this portion of the area is unexamined.

Nares Bank

2.79

1 Nares Bank (11°36′·00N 116°07′·00E) extends 43 miles NNE/SSW. The shoalest part at the SE edge (11°22′·34N 116°13′·28E) has a depth of 17·8 m (58 ft). The N limit of the bank has not been defined.

Reed Tablemount

2.80

1 Reed Tablemount (Reed Bank) (11°23′·00N 116°52′·00E) is a large bank, the limits of which have not been determined. A reef (10°48′·03N 116°39′·23E), with a least known depth of 16·5 m (54 ft), lies near its S extremity. Pennsylvania North Reef (10°50′·14N 116°49′·44E) has 17·8 m (58 ft) of water, and a dangerous rock, shown on the chart, lies 2 miles SE.

2 Sekko Shoal (11°26′·16N 116°54′·74E) with a depth of 22 m (12 fm), lies near the centre of Reed Tablemount. Shoals with depths of 10 to 15 m (33 to 49 ft), lie between Sekko Shoal and Pennsylvania North Reef.

A 14·6 m (48 ft) patch lies at 11°30′·84N 116°31′·56E.

Marie Louise Bank (11°50′·81N 116°48′·25E), a bank near the N extremity of Reed Tablemount with a depth of 18 m (59 ft), was reported in 1885.

Templer Bank

2.81

1 Templer Bank (11°04′·76N 117°16′·10E), roughly circular, with a radius of 5 miles, has a least depth of 2·7 m (9 ft) at its NE extremity.

Leslie Bank

2.82

1 Leslie Bank (11°04′·22N 117°27′·65E), roughly circular, with a radius of 3 miles, has a least depth of 16·5 m (54 ft).

Isolated shoals

2.83

1 Two isolated shoals, the positions of which are doubtful, are located E of Reed Tablemount (2.80) in positions 11°48′·11N 117°49′·79E and 11°42′·94N 117°34′·06E.

DANGEROUS GROUND - SOUTH-WEST PART

General information

Chart 3483 (undetermined datum)

Fish aggregating devices

2.84

1 Fish aggregating devices may be found in the S of the area, in the vicinity of Ardasier Bank (7°45′·93N 114°15′·95E) (2.88). See also 1.12.

Islands, reefs, banks and shoals

Charts 1338, 3483 (undetermined datum)

Major lights

2.85

1 Fiery Cross Reef Light (9°33′·30N 112°54′·15E) (2.54).

West Reef Light (8°50′·68N 112°11′·70E) (2.54).

Amboyna Cay Light (7°53′·49N 112°55′·17E) (2.54).

Other aids to navigation

2.86

1 **Racons:**

Investigator Shoal No 1 Light Buoy (special) (8°09′·53N 114°43′·71E).

Investigator Shoal No 2 Light Buoy (special) (8°07′·17N 114°47′·99E).

Ardasier Bank No 3 Light Buoy (special) (7°56′·61N 114°26′·27E).

Amboyna Cay Light (7°53′·49N 112°55′·17E).

For details see *Admiralty List of Radio Signals Volume 2.*

Investigator Shoal

2.87

1 Investigator Shoal (8°08′·00N 114°42′·00E) extends 18 miles from W to E, and is an irregular atoll formation entirely surrounded by a coral reef. The surrounding reef dries in places, but for the main part has depths of 5 to 15 m. A few rocks may be visible at the W end at HW. The lagoon probably has depths of more than 50 m.

2 A tower (8°07′·88N 114°34′·01E) is located 4 miles from the W end of the reef. Light buoys (special), fitted with racons, are moored 10 miles ENE and 14 miles E of the tower (see 2.86).

Anchorage. The lagoon may provide good anchorage in fine weather. HM Surveying Ship *Iroquois* anchored off the W end of Investigator Shoal, in a depth of 46 m, 2 cables from the edge of the reef.

Ardasier Bank

2.88

1 Ardasier Bank (7°45′·93N 114°15′·95E) extends 37 miles from SW to NE. It is surrounded by a fringe of coral which has depths of 3·7 to 18·3 m. In the centre of the bank there are believed to be depths of 37 to 55 m, but this has not been examined.

No 3 Light Buoy (special), fitted with a racon, is moored on N edge of the bank, see 2.86.

2 A shoal depth of 16·5 m (7°34′·92N 114°40′·03E), position approximate, lies 18 miles ESE of the SE extremity of Ardasier Bank.

Ardasier Reef (7°38′·30N 113°52′·15E), the W extremity of Ardasier Bank, is steep-to except on its E side, where it joins Ardasier Bank. This reef, which dries, encloses a shallow lagoon which is probably accessible to boats at HW.

3 For information concerning the other reefs and shoals in the vicinity of Ardasier Bank, S of the S limit of Dangerous Ground, see 2.23.

Chart 3483 (undetermined datum)

Dallas Reef

2.89

1 Dallas Reef (7°37′·80N 113°47′·52E), which dries, entirely encloses a small lagoon. The lagoon is probably accessible to boats at HW. There is no anchorage. A stranded wreck lies on the SW fringe of the reef.

Union Reefs

2.90

1 Union Reefs (9°50′·00N 114°25′·00E) extend 30 miles from SW to NE and consist of a group of many drying reefs surrounding a large area of shoal water. This area has not been closely examined, but there is no doubt that there are numerous good entrances, and that there is good anchorage to be found. However, adequate protection would not be provided in bad weather.

2 The principal features of Union Reefs are:

Sin Cowe Island (9°52′·96N 114°19′·09E) which lies near the W end of the N side of the bank.

Holiday Reef (9°56′·73N 114°31′·15E); a stranded wreck lies on the reef. A drying reef with a drying cay on it lies 3 miles S of Holiday Reef.

Whitsun Reef (9°59′·67N 114°39′·09E), which lies near the NE extremity of the banks and reefs.

3 Johnson Reef South (9°42′·63N 114°16′·44E), which lies near the SW extremity of the banks and reefs; a stranded wreck lies on the S edge. It has a narrow inlet which is suitable for boats.

Collins Reef (9°46′·23N 114°14′·96E), lies near the W extremity of the banks and reefs; a stranded wreck lies on the N edge of the reef.

Loveless Reef (9°51′·15N 114°16′·44E), which lies near the NW extremity of the banks and reefs.

Tennent Reef

2.91

1 Tennent Reef (8°52′·00N 114°39′·00E), which dries, has numerous above-water rocks on it. The reef encloses a lagoon to which there appears to be no entrance, but it is probably accessible to boats at HW. A light (2.54) is exhibited from Tennent Reef.

Cornwallis South Reef

2.92

1 Cornwallis South Reef (8°43′·02N 114°11′·00E), which dries, and the lagoon enclosed by it, have not been thoroughly examined. The lagoon has depths of 9 m; there is an entrance at its S end, also with a depth of 9 m, in which there are several coral patches.

Alison Reef

2.93

1 Alison Reef (8°48′·60N 113°58′·70E) extends 11 miles from WNW to ESE. The reef, which dries, encloses a lagoon which appears foul and shallow. The S side of the reef consists of a number of drying patches, between which there are narrow channels with depths of 9 m. There is an entrance to the lagoon, on the N side of the reef, towards the W end, which is 3½ cables wide and has a depth of 9 m.

2 **Anchorage** may be obtained, in depths of 60 m, close to the W and SE ends of Alison Reef, and, in depths of 9 m, along the S side of the reef, or off the N entrance to the lagoon.

Pearson Reef

2.94

1 Pearson Reef (8°57′·48N 113°41′·57E), which dries, encloses a lagoon to which there appears to be no entrance, but it is probably accessible to boats at HW. There is a low sand cay on the NE extremity of the reef, and a stranded wreck lies on the NW end.

Anchorage may be obtained, in depths of 27 m, 2½ cables off the NE end of the reef.

Maralie Reef

2.95

1 Maralie Reef (9°12′·27N 113°39′·75E), depth 1·8 m, is steep-to.

In 1992 discoloured water (9°32′·79N 114°01′·40E) was reported between Maralie Reef and Johnson Reef South (2.90).

Charts 1338, 3483 (undetermined datum)

Erica Reef

2.96

1 Erica Reef (8°06′·61N 114°08′·23E), which is small and dries, entirely encloses a shallow lagoon. A few

rocks may show on its E side at HW. There is no anchorage, but the lagoon is probably accessible to boats at HW. A tower stands near the W end of the reef.

Chart 3483 (undetermined datum)

Mariveles Reef

2.97

1 Mariveles Reef (7°58′·57N 113°54′·79E), which dries, entirely encloses two lagoons. A sand cay lies on the neck between the lagoons, and some isolated rocks may be just visible at HW. There is no anchorage, but the lagoons are probably accessible to boats at HW.

Barque Canada Reef

2.98

1 Barque Canada Reef (8°10′·30N 113°18′·30E) extends 18 miles from SW to NE. The reef dries, and there is a group of rocks near its NE extremity. There is a narrow lagoon, which has not been examined, in the middle of the reef. The lagoon is probably accessible to boats.

Anchorage. HM Surveying Ship *Iroquois* found anchorage, in depths of 37 m, 2 cables from the N extremity of Barque Canada Reef, on a spit on which there were heavy overfalls.

Amboyna Cay

2.99

1 Amboyna Cay (7°53′·49N 112°55′·17E) has two parts. The E part consists of a beach of sand and broken coral; the W is covered with a bed of guano, strewn with debris. The cay is surrounded by coral ledges which partly dry and extend 2 cables offshore in places; with any swell, the sea breaks heavily over the ledges. A light (2.54) is exhibited from Amboyna Cay, and an obelisk, 3 m in height, stands on the SW part of the cay.

2 From Amboyna Cay a reef extends 5 cables NW, and a bank, 2 cables wide, extends 1 mile NE. The bank has a depth, at 3½ cables from the cay, of 7·3 m, and at its outer edge, where it is steep-to, a depth of 16·5 m.

2.100

1 **Anchorage.** HM Surveying Ship *Rifleman* obtained fairly sheltered anchorage, in a depth of 9 m, on the bank NE of Amboyna Cay, in the SW monsoon (1.144). In 1933 the French surveying vessel *Astrolabe* anchored with the middle of the cay bearing 106°, distant 3½ cables, in depths of 12 m.

2 Good anchorage exists, in depths of 15 m, with the centre of the cay bearing 224°, distant 1 mile, but, whatever anchorage is chosen, caution must be exercised when anchoring as the banks are extremely steep-to.

2.101

1 **Tides and tidal streams** observed at Amboyna Cay, two days before neap tides, indicated that the water commenced rising at 2300 and falling at 0600, the extent of the rise and fall being doubtful. When the tide was rising the stream set N, and when falling it set W. The maximum rate observed was 1½ kn.

Charts 3482, 3483 (undetermined datum)

Rifleman Bank

2.102

1 Rifleman Bank (7°44′·40N 111°38′·26E) consists of a bank of sand and coral with shallow patches round the edges, within which are greater depths.

Bombay Castle (7°56′·34N 111°42′·63E), depth 3·2 m, is the shoalest part of Rifleman Bank, and lies near its N extremity. The sea breaks upon Bombay Castle, except in the calmest weather. Rifleman Bank Light (red and white tower on cabin platform on piles, 22 m in height) (7°52′·50N 111°44′·69E) is exhibited from a reef 4 miles SSE.

2 Johnson Patch (7°47′·77N 111°34′·53E) lies on the W side of Rifleman Bank; Kingston Shoal (7°34′·44N 111°32′·55E) lies at the S end, and Orleana Shoal (7°43′·48N 111°44′·94E) lies on the E side.

Jubilee Bank

2.103

1 Jubilee Bank (8°30′·60N 111°28′·60E), depth 289 m, was reported in 1972. The bank lies on the charted W limit of Dangerous Ground.

Ladd Reef

2.104

1 Ladd Reef (8°40′·02N 111°39′·39E), is a coral reef which encloses a lagoon which has a white sand bottom. The reef dries in parts. The lagoon is almost inaccessible to boats.

Three conspicuous stranded wrecks lie on the reef. On the NW extremity of the reef is the wreck of a 7200 tonnes steamship, which gives good radar responses; the other wrecks lie 2 miles ENE and 1½ miles ESE from it.

2 **Major light:**

Ladd Reef Light (8°40′·02N 111°39′·39E) (2.54), exhibited from the SW extremity of the reef.

Spratly Island

2.105

1 Spratly Island (8°38′·98N 111°54′·69E) is flat, with a margin of white sand and broken coral. In 1963 the island was covered with short green vegetation. An obelisk, 6 m in height, stood at the S point of the island, and the palm trunks were conspicuous. A large number of birds frequented the island. A stranded wreck lies on the N side.

2 The island, which lies on the S edge of a coral bank which is more than 1 mile in length and 7 cables in width, is surrounded by drying rocky ledges and coral heads. The edges of the bank are steep-to. It is dangerous to venture into depths of less than 20 m due to the sheer and uneven nature of the bottom.

See also the caution at 2.56.

Piracy. An incident occurred in 2005 in the vicinity of the island, see 2.6.

2.106

1 **Anchorage** is obtainable on the bank either NE or SW of the island, but the NE anchorage appears to be the better, even with a NE wind, as the bank is less steep-to.

In April 1951 HM Surveying Ship *Dampier* anchored, in depths of 18 to 22 m, 6 cables NE of the NE end of the island.

Landing is possible on the lee side of the island during the SW monsoon (1.144), but dangerous in a swell due to the numerous coral heads close to the beach.

2 **Tidal stream** observations in the summer months indicated one tide during the 24 hours. In the early part of July HW was at 0900, the rise and fall being 1·5 m (5 ft). The stream set SW during the rising tide

at the NE end of the bank, and from SE to NE during the falling tide.

Chart 3483 (undetermined datum)

London Reefs

2.107

1 London Reefs (8°52′·00N 112°22′·00E) consist of four reefs extending 41 miles from W to E. These reefs are:

West Reef (8°50′·68N 112°11′·70E), from where a light (2.54) is exhibited, which consists of several detached drying coral heads on a reef encircling a lagoon with depths of 11 to 18 m, but encumbered by several underwater coral heads. A low sand cay lies on the E side of the reef. The lagoon may be approached from the SE side, but this is hazardous due to the coral heads. The reef is usually marked by breakers. West Reef Light (2.54) is exhibited from the W side of the reef, and a stranded wreck lies on the S side.

2 Central Reef (8°55′·92N 112°20′·97E), which consists of a belt of coral, awash, surrounding a lagoon in which there are depths of 7 to 15 m. A sandbank, reported to cover at HW springs, lies on the SW extremity of the reef. Central Reef is not always marked by breakers. A stranded wreck lies on the S side of the reef.

3 East Reef (8°50′·33N 112°31′·39E), which consists of a reef-enclosed lagoon to which there is no known entrance. There are depths of 7 to 15 m in the lagoon. There are one or two rocks on the W extremity of East Reef, which seldom cover, even though the sea breaks heavily on the reef.

4 Cuarteron Reef (8°52′·19N 112°50′·61E) is encumbered by rocks, especially on its N side where some are 1 to 2 m high. There is no lagoon.

2.108

1 **Anchorage.** In 1938 HM Surveying Ship *Herald* anchored, in depths of 27 m, 1 cable from the N side of Cuarteron Reef; the S side is steep-to.

Although considerable depths were found, HM Surveying Ship *Rifleman,* in 1865, generally found safe anchorage, for a short period, on one of the slopes adjacent to all the London Reefs.

Tidal streams set E and W along the N side of Cuarteron Reef.

2.109

1 **Caution.** Mariners are warned that it is necessary to exercise great caution if navigating in the vicinity of London Reefs as they are steep-to and sounding is of little value. London Reefs should not be approached with the sun ahead, when it becomes difficult to distinguish shoal waters or breakers.

Chart 3482 (undetermined datum)

Coronation Bank

2.110

1 Coronation Bank (9°20′·20N 111°44′·50E), depth 209 m, lies beyond the W boundary of Dangerous Ground, 40 miles NW of West Reef (2.107). Other shoal patches have been found in the vicinity of Coronation Bank, as can be seen on the chart, the shoalest being a depth of 183 m, 12½ miles WSW of the 209 m depth.

Chart 3483 (undetermined datum)

Fiery Cross Reef

2.111

1 Fiery Cross Reef (9°37′·40N 112°58′·60E) is steep-to and composed of patches of coral, several of which dry or are awash. There are depths of 15 to 40 m between them. A light (2.54) is exhibited from the SW extremity of the reef. With the exception of a prominent rock (9°33′·40N 112°53′·64E) 1 m high situated on the SE side of the largest drying patch, near the SW end of the reef, the whole reef usually covers at HW; in calm weather the reef does not cover. A dangerous wreck lies near the NE extremity.

2 **Anchorage.** In 1933 the French vessel *Alerte* anchored, in depths of 20 m, between the shoals near the NE end of the reef.

Anchorage may also be obtained in depths of 24 m, 2 cables from the reef, with the prominent rock bearing 062°, distant 7 cables.

Climate information: see 1.187 and 1.197.

DANGEROUS GROUND - NORTH-WEST PART

Islands, reefs, banks and shoals

Chart 3483 (undetermined datum)

Tizard Bank

2.112

1 Tizard Bank (10°18′·00N 114°27′·00E) extends some 34 miles from SW to NE. It consists of a lagoon, bordered by drying reefs and shoals with irregular depths, in which there are several coral heads. There are islands on two of the reefs. The islands and reefs are:

2 Itu Aba Island (10°23′·08N 114°21′·83E), which is covered with scrub and trees. There are several partially demolished buildings and two shallow wells on the island, and a look-out mast with a light stands near its E end. A concrete landing jetty extends SSW near the SW end of the island, with a depth of 0·6 m at its head. A reef, defined by breakers, surrounds the island and extends up to 5 cables offshore. A stranded wreck lies on the edge of the reef 6 cables NW of the NW tip of the island.

3 A reef (10°23′·25N 114°28′·51E) which covers at HW, lies 2 miles E of Itu Aba Island. A shoal lies in the middle of the channel between them. A ridge, over which the depths are irregular, connects this reef with a sand cay with tall bushes on it, 3½ miles farther E. The sand cay is surrounded by a reef extending 5 cables offshore. Safe anchorage may be obtained on the ridge, in depths of 13 to 18 m. Shoal patches are to be found up to 2½ miles W of the cay.

4 Petly Reef (10°24′·73N 114°34′·62E) lies near the extremity of a steep-to coral ledge which extends 5 miles NE from the NE side of Tizard Bank. Several shoals lie on this ledge. A stranded wreck lies on the N edge of the reef.

Eldad Reef (10°21′·13N 114°41′·90E), which lies at the E extremity of Tizard Bank. It is steep-to on all but its SW side. A few large, and many small above-water rocks lie on the reef.

5 Namyit Island (10°11′·14N 114°21′·40E), which lies on the S side of Tizard Bank, is covered with small trees and bushes. It is surrounded

by a reef which extends 1 mile W, and 3½ cables in other directions.

6 Gaven Reefs (10°12′·94N 114°13′·14E), which are two reefs 2½ miles apart, lie at the SW end of Tizard Bank. The reefs cover at HW, and coral heads lie between them.

2.113

1 **Anchorage.** In 1951 HM Surveying Ship *Dampier* anchored, in depths of 18 m, 6 cables SSE of the W end of Itu Aba Island (2.112). The best approach to this anchorage, from seaward, is through the deep-water channel close to the E end of the island.

Shallow-draught vessels can anchor as convenient, in case of necessity and in fine weather, almost anywhere on the bank surrounding the lagoon.

2 Fishermen usually visit the islands in December and January and leave at the start of the SW monsoon (1.144).

Climate information: see 1.187 and 1.196.

Discovery Great Reef

2.114

1 Discovery Great Reef (10°03′·44N 113°51′·15E) is steep-to. Most of the reef dries, and there are several above-water rocks on it. A stranded wreck lies in the E side of the reef. There is a lagoon in the centre, with no apparent entrance.

Anchorage. In 1867, despite the reef being steep-to, HM Surveying Ship *Rifleman* anchored, in depths of 77 m (42 fm), 5 cables off the rocks at the N end of the reef.

Discovery Small Reef

2.115

1 Discovery Small Reef (10°01′·80N 114°01′·24E) is a round, very steep-to coral patch, which dries.

Western or Flora Temple Reef

2.116

1 Western or Flora Temple Reef (10°15′·89N 113°36′·61E) is steep-to and dangerous. There are below-water rocks at the SW end of the reef, and depths of 1·8 to 5·5 m in other places.

Subi Reef

2.117

1 Subi Reef (10°54′·23N 114°06′·23E), which dries, and upon which the sea usually breaks, is steep-to. It is composed of coral and surrounds a lagoon with no apparent entrance.

Thitu Island and Reefs

2.118

1 Thitu Island (11°03′·46N 114°16′·77E) and its associated reefs are situated on two adjacent coral banks separated by a narrow, deep channel.

Thitu Island lies near the E end of the W bank. It is low and covered with grass and scrub, except for a palm grove at its SW end. The island is surrounded by a drying reef which extends up to 5 cables from its NE side.

A light (metal structure) is exhibited from the W side of the island.

2.119

1 The W bank has reefs and irregular depths at its edges, and greater depths within. Features on the W bank, with positions from Thitu Island are:

A reef 1½ miles NW. Irregular depths exist in the channel between Thitu Island and the reef.

2 A drying reef with a sand cay near its centre 3½ miles WNW. In the middle of the passage, between this reef and the reef 1¼ miles ENE, leading into the lagoon, there is a shoal.

3 A reef forming the W extremity of the W bank 6 miles W. There are detached reefs, always marked by breakers, between this reef and the reef 1¼ miles ENE.

A small reef on the S edge of the bank 2 miles SW. The S edge of the bank is not as dangerous as the N edge.

4 The E bank is a mass of reefs and shoal patches. A dangerous rock, 1¾ miles E of Thitu Island Light (2.118), lies 1 cable S of the 200 m depth contour.

2.120

1 **Anchorage.** Shallow-draught vessels may anchor on the S edge of the W bank, with the sand cay bearing between 328° and 036°.

There is also anchorage, in depths of 18 m, with Thitu Island bearing NE, distance 1 mile.

Landing is best achieved during the NE monsoon (1.144) in the middle of the W side, where there is an opening in the surrounding reef.

Thitu Island is occasionally inhabited by fishermen.

Loaita Island and Reefs

2.121

1 Loaita Reefs (10°45′·33N 114°29′·50E) are located on a steep-to bank and consist of a lagoon surrounded by shoals. There are reefs on the S side of the lagoon; two have sand cays on them and Loaita Island (10°41′·10N 114°25′·20E) lies on the S reef. The depths over the surrounding shoals are irregular.

2 Loaita Island is low and covered with mangrove bushes, trees, and coconut palms. It is surrounded by a drying reef. The island is occasionally inhabited by fishermen.

3 The reefs on the edge of the bank are:

A drying reef (10°42′·55N 114°19′·58E) on the W extremity of the bank. A sand cay is situated in the middle of the NE part. The stranded wreck of a steamship lies on the SW part. In 1868 no depth of less than 7·3 m was found on the NW edge of the bank NE of this reef.

4 Lankiam Cay (10°42′·88N 114°31′·98E). Composed of sand, this cay lies near the middle of a reef which extends up to 5 cables from it in places.

5 **Anchorage.** There is anchorage on the bank with Loaita Island bearing 260°, distant 4 cables. The reef is visible from this position.

Irving Reef

2.122

1 Irving Reef (10°53′·17N 114°55′·62E) consists of a reef, which dries in places, enclosing a lagoon. There is a small sand cay near the N end of the reef.

Menzies Reef

2.123

1 Menzies Reef (11°09′·67N 114°47′·52E), awash, lies at the NE tip of a ridge of foul ground, 2 to 5 miles wide, which extends 20 miles NE from the N extremity of Loaita Reefs (2.121). There are depths on the ridge of from 3·7 m at the shoalest known part, 9 miles SSW of Menzies Reef, to 50 m elsewhere.

West York Island

2.124

1 West York Island (11°05′·75N 115°01′·24E) is covered with trees and bushes. It has some tall coconuts palms on its S end. A reef, with isolated dangerous rocks and depths of less than 2 m, extends 2 miles N and 3 miles W from the island.

North Danger Reef

2.125

1 **Major Light:**

North Danger Light (grey round masonry tower, 38 m in height) (11°25′·72N 114°19′·80E), exhibited from South West Cay.

2 **North Danger Reef** (11°25′·72N 114°19′·80E) is a steep-to coral formation. The middle of the formation is remarkably flat and even, with depths of 37 to 47 m over the greater part, except for a shoaler patch near its centre. The lagoon is surrounded by a shallow reef of varying width, on which there are many dangers. Extensive areas of the reef dry in patches at the NE and SW ends of the formation.

All known dangers are plainly visible in good light conditions.

3 Features on North Danger Reef are:

North East Cay (11°27′·50N 114°21′·60E), is low, thickly wooded, and covered with coarse grass, with a fringe of low bushes round the edges. It lies on a drying reef which extends 6 cables NE from it. A channel, 3 cables wide, lies between this reef and the W extremity of North Reef 1¼ miles E; several shoals lie in the middle of this channel, which should not be attempted. A light is exhibited at the N end of North East Cay.

4 North Reef (11°25′·72N 114°19′·80E) on which lies a stranded wreck. During the NE monsoon (1.144) the sea breaks heavily on the NE side of this reef.

5 South Reef (11°23′·37N 114°17′·93E). During the SW monsoon (1.144) the sea breaks heavily on the SW side of this reef.

6 South West Cay (11°25′·72N 114°19′·80E), thickly wooded and covered with coarse grass. It is a breeding place for sea birds, and is covered with guano. Guano has been exported from South West Cay on a considerable scale. Two wells, and a mast, 12 m in height, are situated near the centre of the SE side of the cay. The cay is surrounded by a coral reef which dries in patches, and extends up to 3 cables in places.

North Danger Light is exhibited from the NW side of South West Cay.

7 Iroquois Ridge (3 cables to 2 miles SE), which extends from North East Cay towards Day Shoal (2½ miles ESE). There is a narrow deep channel at the SE end of Iroquois Ridge, between it and Day Shoal.

2.126

1 **Anchorage.** During the NE monsoon (1.144) calm water may be obtained under the lee of North Reef, and during the SW monsoon, under the lee of South Reef. No anchorage can be recommended; the bottom within the surrounding reef is composed of sand and coral.

Landing is possible on the SE side of South West Cay during the SW monsoon (1.144), even in a fresh wind. A channel, with several shoal patches in it, separates this cay from North East Cay.

2.127

1 **Currents** appear to be mainly seasonal, depending on the prevailing monsoon. In the middle of North Danger Reef a rate of ½ kn is never exceeded, except with very strong winds. On or near the encircling reef stronger currents may be expected, up to a rate of a little over 1 kn: the direction is still mainly with the prevailing wind, but weaker currents, against the wind, occur for short periods at times.

Trident Shoal

2.128

1 Trident Shoal (11°27′·77N 114°40′·24E) is steep-to and composed of coral. Many coral patches with irregular depths enclose a lagoon with greater depths. A reef, awash, lies at the N end of the shoal.

Lys Shoal

2.129

1 Lys Shoal (11°21′·41N 114°35′·62E) is steep-to and consists of a number of shoal patches with a lagoon in the middle. A narrow deep channel separates Lys Shoal from Trident Shoal (2.128).

OFFSHORE REEFS, BANKS AND SHOALS NORTH OF DANGEROUS GROUND

General information

Charts 3483, 3489 (undetermined datum)

Scope of the section

2.130

1 The area covered in this section is the offshore sea area N of the charted Dangerous Ground (10°00′·00N 115°00′·00E) (2.50), and bounded in the W and N by the limits of this book.

The area to the W and NW is described in *China Sea Pilot Volume 1;* the area to the N and E in *China Sea Pilot Volume 3;* and the coastal area to the E in Chapters 7, 8, 9 and 10 of this book.

Routes

2.131

1 The main route through the area is the direct route between Manila and Hong Kong. South of this route are the direct routes between Mindoro Strait (7.2) and Hong Kong, and from the N end of Palawan Passage (7.15) to Hong Kong. See *Ocean Passages for the World* for further information.

2 **Route for low-powered vessels.** A section of the route (2.8) from Singapore to Hong Kong for low-powered vessels during the NE monsoon, directions for which are given in 2.8, traverses the N part of this area.

Caution. Whilst routes through the area are generally plotted as deep-water routes, the threat posed by the reefs, banks and shoals in the area, and consequently the importance of keeping to the planned route, should not be underestimated.

Depths

2.132

1 The sea area encompassed by this section comprises deep water, for the most part in excess of 2000 m, except in way of the isolated reefs, banks and shoal patches which rise precipitously from the deep seabed.

Samples of the deep seabed indicate that it consists mainly of mud.

Weather
2.133

1 Information on climate and weather (see 1.164) should be read in conjunction with the information contained in *The Mariner's Handbook*, which explains in more detail many aspects of meteorology and climatology of importance to the mariner. Weather reports and forecasts for the area are regularly broadcast in a number of different languages, including English. See 1.52 for more details.

Islands, reefs, banks and shoals

Isolated shoal
2.134

1 An isolated shoal (11°54′·32N 114°21′·40E), existence doubtful, depth 82 m (42 fm), lies 30 miles N of North Danger Reef (2.125).

Dreyer Banks
2.135

1 Dreyer Banks (13°56′·24N 115°24′·54E) have a least known depth of 112 m (2006).

Scarborough Reef
2.136

1 **General information.** Scarborough Reef (15°09′·46N 117°45′·41E), is named after the *Scarborough* which struck the reef in 1748. It is steep-to on all sides and consists of a narrow belt of coral enclosing a lagoon of clear blue water.

From time to time radar conspicuous wrecks are to be found on the reef; these may be used as bombing targets. Fishing vessels frequent the area.

2 **Currents.** In the vicinity of Scarborough Reef the current varies with the monsoon. During the NE monsoon (1.144) the predominant direction is NW or W, whilst during the SW monsoon it is NE.

2.137

1 **Directions.** The lagoon within the reef may be entered from the E, passing:

Close N of South Rock, 3 m high, the tallest rock situated on the SE extremity of the reef, thence:

Through the entrance channel, 2 cables wide, with depths of 9 to 11 m, but obstructed in places by patches of reef which reduce the depth to 2·7 m. The lagoon is shallow just within the entrance.

Stewart Bank
2.138

1 Stewart Bank (17°12′·44N 118°43′·59E), which extends some 35 miles in an ENE direction, has a least depth of 430m, reported in 1965.

A shoal patch (18°00′·00N 119°22′·53E), position approximate, lies 66 miles NE of Stewart Bank. Two further patches 42 and 101 m (existence doubtful) lie at 16°52′·70N 118°00′·50E and 17°01′·40N 117°54′·20E respectively.

Annex 236

U.S. National Geospatial-Intelligence Agency, *U.S. Chart No. 1, Symbols, Abbreviations and Terms used on Paper and Electronic Navigational Charts* (12th ed., 15 Apr. 2013)

U.S. Chart No. 1

Symbols, Abbreviations and Terms used on Paper and Electronic Navigational Charts

12th Edition
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Prepared Jointly by

Department of Commerce
National Oceanic and Atmospheric Administration

Department of Defense
National Geospatial-Intelligence Agency

SYMBOLS, ABBREVIATIONS AND TERMS

Contents

Document Sections and *ECDIS Pages*

Symbol Sections

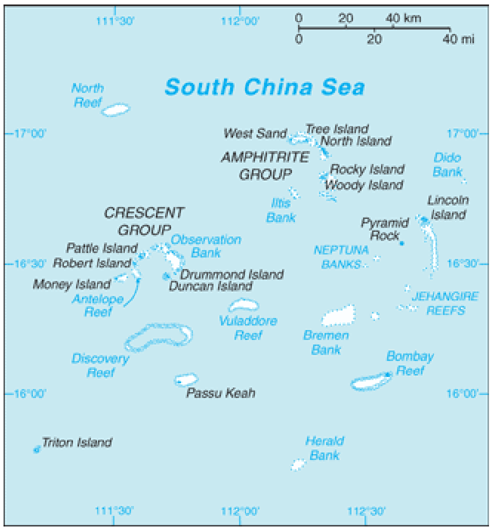
Rocks, Wrecks, Obstructions, Aquaculture K

No.	INT	Description	NOAA	NGA	Other NGA	ECDIS	
General							
1		Danger line: A danger line draws attention to a danger which would not stand out clearly enough if represented solely by its symbol (e.g. isolated rock) or delimits an area containing numerous dangers, through which it is unsafe to navigate					Obstruction, depth not stated
							Obstruction which covers and uncovers
						5	Underwater hazard with depth of 20 meters or less
							Isolated danger of depth less than the safety contour
							Foul area, not safe for navigation
2	7_5	Swept by wire drag or diver	21 Rk; 35 Rk; 4_6 Wk	4_6 Obstn; 4_6 Wk (1937)	# (15_7)	4	Swept sounding, less than or equal to safety depth
						21	Swept sounding, greater than safety depth
3	$\overline{20}$	Depth unknown, but estimated to have a safe clearance to the depth shown	$\overline{4_6}$ Wk; $\overline{35}$ Rk	$\overline{4_6}$ Obstn		ECDIS displays safe clearance depths in the same manner as known depths.	
Rocks							
Plane of Reference for Heights → H		Plane of Reference for Depths → H					
10	(4,1) (3,1) (1,7) Height datum Chart datum	Rock (islet) which does not cover, height above height datum	25	(21)	(4 m)		Land as a point at small scale
						8 m	Land as an area, with an elevation or control point
11	3_7 2_7 (1_6) (1_6) Height datum Chart datum 5m	Rock which covers and uncovers, height above chart datum	(2); (2); 4	(0_6) Uncov 1m; (0_6) Uncov 1m			Rock which covers and uncovers or is awash at low water
						4	Underwater hazard which covers and uncovers with drying height
							Isolated danger of depth less than the safety contour
12	Height datum Chart datum 5m	Rock awash at the level of chart datum					Rock which covers and uncovers or is awash at low water
							Underwater hazard which covers and uncovers
							Isolated danger of depth less than the safety contour

Annex 237

United States Central Intelligence Agency, “Paracel Islands,” *CIA World Factbook* (2013)

The World Factbook



East & Southeast Asia :: **Paracel Islands**

Introduction :: Paracel Islands

Background:

The Paracel Islands are surrounded by productive fishing grounds and by potential oil and gas reserves. In 1932, French Indochina annexed the islands and set up a weather station on Pattle Island; maintenance was continued by its successor, Vietnam. China has occupied all the Paracel Islands since 1974, when its troops seized a South Vietnamese garrison occupying the western islands. China built a military installation on Woody Island with an airfield and artificial harbor. The islands also are claimed by Taiwan and Vietnam.

Geography :: Paracel Islands

Location:

Southeastern Asia, group of small islands and reefs in the South China Sea, about one-third of the way from central Vietnam to the northern Philippines

Geographic coordinates:

16 30 N, 112 00 E

Map references:

Southeast Asia

Area:

total: ca. 7.75 sq km
land: ca. 7.75 sq km
water: 0 sq km

Area - comparative:
NA

Land boundaries:
0 km

Coastline:
518 km

Maritime claims:
NA

Climate:
tropical

Terrain:
mostly low and flat

Elevation extremes:
lowest point: South China Sea 0 m
highest point: unnamed location on Rocky Island 14 m

Natural resources:
none

Land use:
arable land: 0%
permanent crops: 0%
other: 100% (2011)

Irrigated land:
0 sq km (2011)

Natural hazards:
typhoons

Environment - current issues:
NA

Geography - note:
composed of 130 small coral islands and reefs divided into the northeast Amphitrite Group and the western Crescent Group

People and Society :: Paracel Islands

Population:

no indigenous inhabitants
note: there are scattered Chinese garrisons

Government :: Paracel Islands

Country name:

conventional long form: none
conventional short form: Paracel Islands

Economy :: Paracel Islands

Economy - overview:

The islands have the potential for oil and gas development. Waters around the islands support commercial fishing, but the islands themselves are not populated on a permanent basis.

Transportation :: Paracel Islands

Airports:

1 (2013)
country comparison to the world: 230

Airports - with paved runways:

total: 1
1,524 to 2,437 m: 1 (2013)

Ports and terminals:

small Chinese port facilities on Woody Island and Duncan Island

Military :: Paracel Islands

Military - note:

occupied by China

Transnational Issues :: Paracel Islands

Disputes - international:

occupied by China, also claimed by Taiwan and Vietnam

Annex 238

Antonio Remiro Brotóns, *Spain in the Philippines (16th - 19th Centuries)* (19 Mar. 2014)

SPAIN IN THE PHILIPPINES
(16th – 19th Centuries)

Antonio REMIRO BROTÓNS*

Summary. 1. Introduction. 2. Christian titles. 3. Occupation and colonization of the Philippine Islands. 4. Plans to conquer China and other Asian kingdoms. 5. Traders and pirates. 6. Boundary treaties with Portugal in the 18th century. 7. Paragua (Palawan). 8. Cartography of the archipelago in the 18th century. 9. Southern boundaries. 10. Cartography of the archipelago in the 19th century. 11. End of Spanish sovereignty in the Philippines: the treaties with the United States (1898-1900). Annex: List and description of some maps of the Philippines in the Spanish archives.

Abstract: *China made repeated explorations in the South China Sea and mapped the area prior to the middle of the 15th century. But after 1450, Chinese imperial policy changed and actually prohibited maritime excursions from its ports; all but eliminating China's naval and maritime presence in the South China Sea for centuries. By the early 16th century, Spain and Portugal had replaced China as the most significant maritime powers in the area. From then until the end of the 19th century, European powers – Spain, Portugal, the Netherlands and, afterwards, France and Britain, all of which maintained colonies surrounding the South China Sea – were the dominant maritime states. After 1898, when Spain ceded the Philippines to the United States, the United States replaced Spain as a significant force in the South China Sea, along with the other European colonial States. China was still absent from the area at that time.*

1. Introduction

Under the Ming dynasty (1368-1644), China was the centre of a powerful and advanced empire around which a constellation of vassal and tributary states turned. After a strategic decision taken in the mid-15th century that had serious historic consequences, however, the Empire withdrew into itself, and surrendered maritime exploration and expansion at a time when the Christian kingdoms, especially Spain and Portugal, were ready to execute expansive policies of discovery, maritime control and territorial occupation for commercial, religious and domination purposes.

The memories of Cheng Ho and his voyages to the Indian Ocean in the first third of the 15th century were dissipated, if not outright eliminated. The Empire literally burned his ships, maps, and most of his documents. Around 1500, a law was passed prohibiting the building of deep sea vessels for oceanic navigation under penalty of

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death. And in 1551, thirty years after Magellan's voyage, the rulers of the Ming dynasty declared that going to sea on a ship with more than one mast would be considered a crime of espionage.

When the Portuguese arrived in the Moluccas and the Castilians in the Philippines, the great period of the Chinese navy had ended. The naval technology of the Chinese, which since the 12th century had been accumulating innovation after innovation, to the point of being capable of producing ships that were not only enormous, but also safe and easy to manage, decayed irreparably during the 16th century.

Whatever the relationships that the Chinese Empire had maintained with the riparian entities and peoples of the South China Sea, be it serfdom or otherwise, it is clear that when the Portuguese and Spanish arrived and settled in the eastern archipelagos at the beginning of the 16th century, the Empire did not offer the least resistance and did not invoke any title of ownership. Thus the invocation now of China's ancient discovery and the voyages and maps of its sailors is of no legal relevance.

The Portuguese and Spanish considered themselves to be "the discoverers", and they were, in a sense, in terms of what the Europeans did not know. They took possession of islands and maritime areas in the name of their monarchs; they fought the local chiefs or won their allegiance by means of unequal alliances; and they drew maps and identified routes. They acted, therefore, like sovereigns according to the standards of the European public law that would serve as the basis for the modern international law that determined the destiny of the territories that they occupied in the South China Sea (or West Philippine Sea), and the maritime areas surrounding those territories.

Certainly, China exerted neither pacific nor continuous authority in the region. Not even at the time at which the Portuguese and Spanish sailors 'discovered', navigated, and occupied the area, and subjected it to their rule. Thus, although it could be accepted, in a very general sense, that archaeological remains indicate that some nomadic fishermen conducted certain activities in the Philippine archipelago, the reality is that trade, smuggling and piracy were the activities that occupied the scene of the relationship with China once the Spanish and Portuguese monarchies governed the region. That, and the aim, that was frustrated so many times, to penetrate China in order to preach the Gospel.

2. Christian titles

At the end of the 15th century and the beginning of the 16th century, when the "great navigations" of the Spanish and Portuguese kingdoms took place with the goal of reaching the Spice Islands by new maritime routes through the East and West, the rights of the local rulers were ignored because they did not form part of the *communitas Christiana*[1]. What really mattered was ensuring that the competition between Christian princes would not lead to war among them. The papal bulls (1493), based on a theocratic conception that later became outmoded, tried to satisfy this objective, regardless of the disbelief in their juridical value expressed by other Christian princes who found them to be detrimental to their prospects. Spain and Portugal, however, have admitted that the papal authority legitimized their overseas expansion and helped them resolve their differences by means of diplomatic negotiation[2].

This negotiation led to the Treaties of Tordesillas (1494) and Zaragoza (1529). Thus, in accordance with the understanding of the partition of the 'undiscovered' world expressed in bulls and treaties, the Spanish monarchy expanded along the Pacific Ocean, acknowledging only the rights of another "Christian prince" (Portugal)[3].

The enforcement of these agreements on the ground was not easy, however. Portugal and Spain were competitors for the Spice Islands, or the Moluccas, therefore they not only argued about the location of the islands, but each tried to be the first to reach them. This story of the Spanish-Portuguese conflict cannot be addressed here, except to emphasize that the parties affirmed their absolute dominion over the territories they "discovered" and occupied.

3. Occupation and colonization of the Philippine Islands

The problem of which monarch had the better claim over the Moluccas directly affected the adjacent archipelagos, and among them, the one named by Rui López de Villalobos (in 1543) as the Philippine Islands, in honour of Philip II. Some islands were already known by 1529, when the expeditions of Magellan and Loaísa landed in Cebú, but the existence of the archipelago was unknown.

It is well known that the famous Andrés de Urdaneta – who strongly opposed the enterprise of occupying the Philippines because, like the Portuguese, he considered that doing so violated the Treaties of Tordesillas and Zaragoza – tried without success to redirect the effort to the exploration of New Guinea and the southern territories. In any case, the decision to occupy and colonize the Philippines and to control the

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[1] Society and international law, as we know them now, are founded in the emergence and development in Europe from the mid-15th century of a group of Christian monarchies that defined themselves as sovereign and independent. This *communitas christiana* settled in 1648 with the Peace of Westphalia.

[2] García Gallo, Alfonso, "Las Bulas de Alejandro VI y el ordenamiento jurídico dela expansión portuguesa y castellana en África e Indias", AHDE, 27-28, 1957-1958, pp. 461-829; Pérez Bustamante, Ciriaco, "La Bula de Alejandro VI y el meridiano de demarcación. Portugueses y españoles en Oceanía. La expedición de López de Villalobos", *Discurso leído en la Sección Universitaria de Canarias en la solemne apertura del curso académico de 1922 a 1923,* Imprenta de suc. de M. Curbelo, La Laguna, pp. 1-59.

[3] Rumeu de Armas, Antonio, *Los tratados de partición del océano entre España y Portugal: intervención de la diplomacia española,* Ministerio de Asuntos Exteriores, Escuela Diplomática, 1944; Díaz-Trechuelo, Lourdes, "El tratado de Tordesillas y su proyección en el Pacífico", *Revista española del Pacífico,* 4 (January - December 1994).

adjacent seas was taken by Philip II, and in practice Portugal agreed, although reluctantly. The fact that Philip II himself personally united the Crown of Portugal and that of Castile in 1580 made that acquiescence easier.

The mission had to be carried out through the Viceroyalty of *Nueva España* (Mexico), because the Spanish Crown could not use the Portuguese route, and expeditions from the Iberian Peninsula were ruled out because they required reaching the Pacific via the most southern part of America. The governors of the Philippines depended on the Viceroy of *Nueva España*, and regular trade was exclusively carried out through the highly regulated Manila-Acapulco route. Moreover, it was *Nueva España* that provided the Philippines with resources for the support of its administration and government until the emancipation of the American provinces from the Crown at the beginning of the 19th century.

The first expedition conducted within these new coordinates was that of Ruy López de Villalobos (1542-1545), who having sailed to Sarangani, made a stop at Leyte and Mindanao[4]. The failure of this expedition opened a parenthesis of more than twenty years.

It was in 1559, when the question of the "trip to the West" came back into consideration. By royal decree, Philip II commissioned Luis de Velasco, Viceroy of *Nueva España*, to send two ships across the ocean in accordance with the "agreement arrived to with His Serene Highness the King of Portugal"[5], but with the understanding that the agreement did not include the islands to the north of the Moluccas.

The expedition of Miguel López de Legazpi (1564-1565), which had precise instructions to go directly to the Philippines,[6] landed on Cebú Island, where they founded the Villa de San Miguel (later Ciudad del Santísimo Nombre de Jesús)[7] on 8 May 1565. The Portuguese sent a squadron at the behest of Gonçalo Pereira demanding their retreat. But their claims based on the infringement of the Treaty of Zaragoza were rejected by Legazpi, who finally, on 24 June 1570, got the royal orders that authorized him to found cities and to distribute assignments. Legazpi founded Manila, in the biggest island, Luzón, on 26 June 1571.

In 1580, the assumption of the Portuguese Crown by the Spanish King Philip II altered the Iberian colonial scene in Asia. As José de Acosta said "the two Crowns of Portugal and Castile have come from the East and West, making a perfect circle around the

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4 C. Varela, *El viaje de don Ruy López de Villalobos a las islas de poniente, 1542-1548*, Milán, 1983. The "Relación de la expedición de Ruy López de Villalobos, que partió de la Nueva España a las Islas del Poniente" (1542) can be consulted directly in Archivo General de Indias (AGI), Patronato, 23, R. 10.

5 AGI, Patronato, 23, R.12.

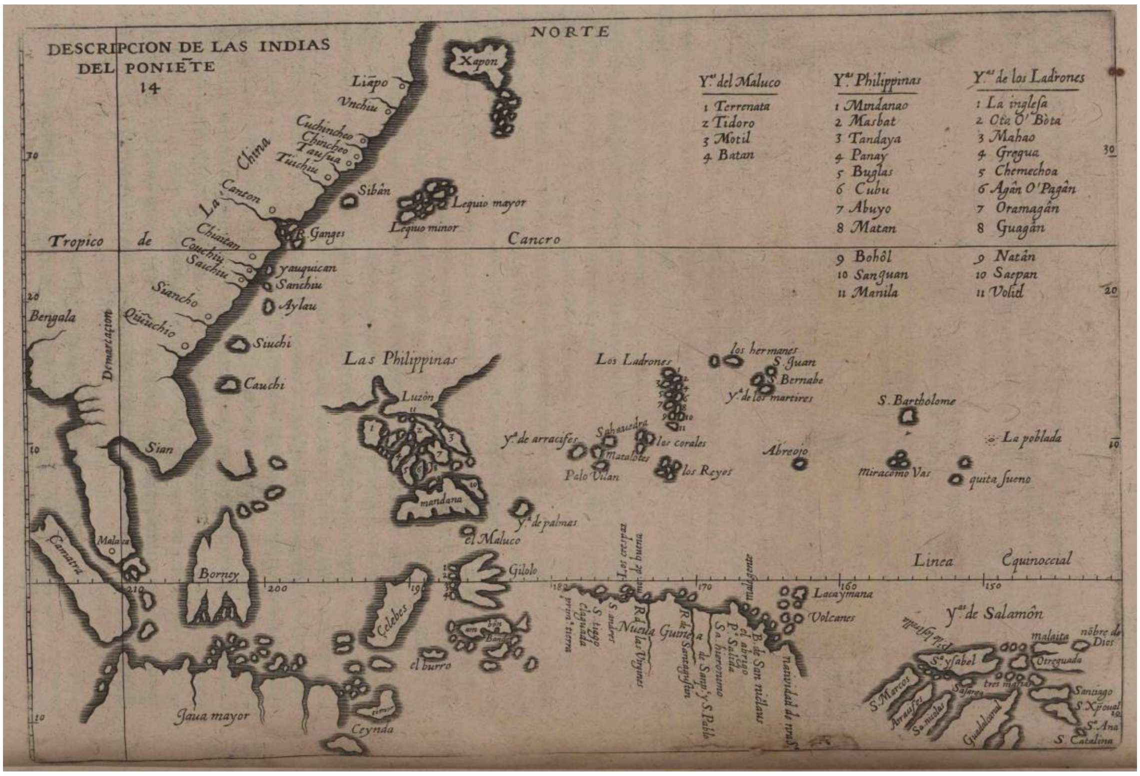
6 Relación de Rodrigo de Espinosa. AGI, Patronato, 23, R. 16.

7 "Carta de Miguel López de Legazpi, por la que notifica su llegada a las Islas Filipinas, el envío de una nao para descubrir la ruta de regreso y la actitud de los habitantes de aquellos lugares" (27 May 1565). AGI, Patronato, 23, R. 23 (1).

universe, until they have joined their discoveries. It is surely noteworthy that some have arrived in China and Japan through the east, and others have arrived in the Philippines through the West, and that these are neighbours and almost attached to China ”[8].

The Spanish in the Philippines believed that their chance for definitive expansion and dominion over East Asia had arrived. The creation of the Royal Audience of Manila in 1583 was interpreted by a privileged witness – the provincial superior of *Compañía de Jesús*, Juan de la Plaza – as the King’s plan to: “join to the government in the Philippines everything from the end point of Malacca up to China, Japan and Maluku”[9].

The cartography of that period reflected this, as can be seen in the maps of Antonio de Herrera printed in 1601 (see below).



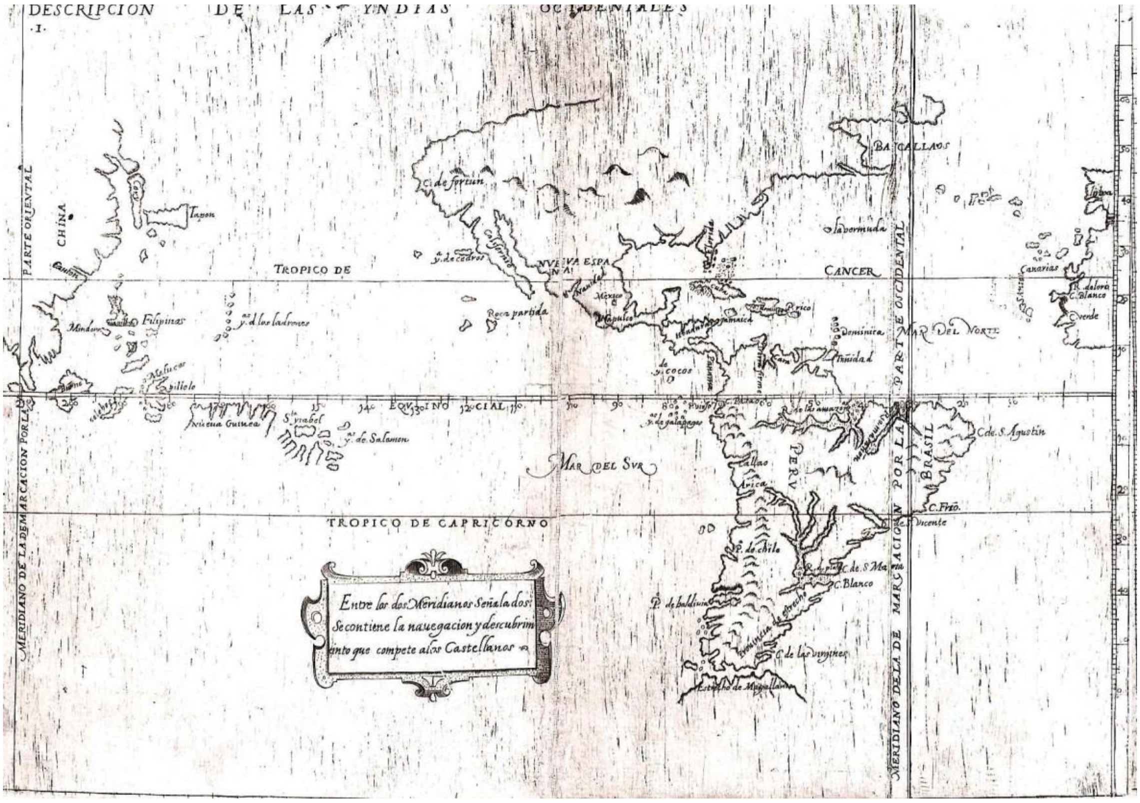
“Descripción de las Indias del Poniente” [“Description of the West Indies”], Antonio de Herrera, *Descripción de las Indias* [*Description of the Indies*], Madrid, 1601. Albert and Shirley Small Special Collections Library, University of Virginia

A well-known series of maps which are among the most important of the so-called “Age of Discovery” were produced during the following decade. They are copies of the official world map of the Crown of Castile kept by the cosmographers at the *Casa de la*

[8] *Historia Natural y Moral de las Indias,* 1590 (see in: http://www.biblioteca-antologica.org/wp-content/uploads/2009/09/ACOSTA-Historia-natural-y-moral-de-las-Indias.pdfa).
[9] AGI, Filipinas, 18B, R.9, N.122.

Contratación in Seville, which incorporated the data that the voyagers who traded and conquered overseas with official license had to submit upon their return to Spain[10].

These maps, based on the experience of numerous explorers, were also diplomatic tools designed to promote the interests of Castile. The Spice Islands and their surroundings, including what was known of the Philippines, always appeared on the left side of the map, to the extreme west. These maps thus marked the beginning of what could be called the "westernization of the Philippines", the intent to map out the islands as the extreme West of the Spanish Indies[11].



"Descripción de las Indias Occidentales"["Description of the West Indies"], Antonio de Herrera, *Descripción de las Indias* [*Description of the Indies*], Madrid 1601. Albert and Shirley Small Special Collections Library, University of Virginia.

The initiative to westernize the East corresponds with the political and economic realities. Spain had no alternative to trying to get to the Spice Islands and the Philippines through the Pacific because the route along the Cape of Good Hope had been forbidden by the Treaty of Tordesillas. It is possible that for the 16th century minds, the effort appeared natural because at that time latitude was more important

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[10] The Crown issued ordinances (13 July 1573) establishing the precise manner in which descriptions, reports and geographical maps of the overseas possessions were to be carried out. These regulations promoted the production of numerous geographical reports and maps of the American and Asian possessions. See Vindel, F., *Mapas de América y Filipinas en los libros españoles de los siglos XVI a XVIII,* Madrid, 1959.

[11] Martín-Merás, Luisa, *Cartografía marítima hispánica: La imagen de América*, Madrid, Ministerio de Obras Públicas, Transportes y Medio Ambiente, 1992.

than longitude for the determination of the character of an area and its people. Both the West and the East Indies were, above all, "the Indies", places that were situated within the old torrid area that was imagined to be the Tropics during the early phase of the modern era[12].

4. Plans to conquer China and other Asian kingdoms

The archipelago became a platform to launch projects to reach the coasts bordering Asia, especially China. Legazpi himself thought about building galleys to verify "...all the islands and many others that are further away from them" and "to cover the coast and mainland of China and to survey what is there"[13]. As Captain Juan Pablo Carrión, who accompanied Legazpi, said: "If His Majesty (Philip II) wants to obtain the greatest benefits for his Royal Crown, it is essential to go to the coast of China"[14].

During the reign of Philip II, countless plans and initiatives directed specifically towards the conquest of China and other Asian kingdoms were presented. Those plans showed very clearly, especially during the first decade (1565-1575), the Mexican pattern of conquest. This model was carried out with just a handful of men and without trying to understand the context and the real possibilities of the insertion of the Spanish in such an extensive populous and complex region.

It was Francisco de Sande, governor and general captain of the Philippines from August 1575, who made the greatest efforts to expand to the Asian coasts. According to the instructions he had been given, Sande had to send to the Council of the Indies news regarding progress in evangelism, as well as, reports and descriptions of the islands, new discoveries and populations, and information about China[15]. Sande touted the benefits of the conquest on various occasions[16].

Nevertheless, it was the priests who insisted most on the expansion. The Augustine monk Martín de Rada was the first to explicitly present a plan for the conquest of China in a letter he addressed to King Philip on 8 July 1569. In it, he recommends providing the islands with an adequate naval force and expresses the notion of the Philippine archipelago as a starting point for the conquest of China[17]. The document shows the optimism of the Spanish conquerors who felt they were invincible; moved by the faith, the ambition and the proselytising zeal of the monks.

None of these plans materialized, but they highlight the perception of the potential dominion of Spain over infidel lands and the seas that bathed their shores. That being

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[12] Wey Gómez, Nicolás, *The Tropics of Empire: Why Columbus Sailed South to the Indies,* Cambridge, Mass.: MIT Press, 2008.

[13] Letter to the King from Cebú, 26 June 1568. AGI, Patronato, 6, 1, 8.

[14] AGI, Patronato, 263, 1 1 f. 2 rº.

[15] Aranjuez, 5 December 1574. AGI, Filipinas, 339, L. 1, F. 66vº-47vº.

[16] Sande's letter to the King, 25 May 1580. AGI, Filipinas, 6, 3 38.

[17] Copy of the letter of fray Martín de Rada to the Viceroy of Nueva España, reporting on the government of the Philippines, AGI, Filipinas, 79, 1, 1

the case, the Spanish began gathering information about China as soon as they occupied the Philippines. Initially, they obtained this information from the native inhabitants of the islands, but subsequently they obtained it from the traders and Chinese immigrants living in Manila, known as the *sangleyes.* Information obtained from both Portuguese and Castilian sources through a series of raids and envoys were summarized in the great synthesis by Fray Juan González de Mendoza, *History of the most notable things, rites, and customs of the Great Kingdom of China*[18].

The expansion to the West was not targeted towards China alone. In 1597, the Council of the Indies received "some reports on the kingdoms of Cambodia, Siam, Champa and Cochinchina" that provided detailed descriptions of geography, traditions, etc." of those kingdoms[19]. Proposals to conquer Siam, Champa, Cambodia and Cochinchina were made by explorers like Fernando de los Ríos Coronel[20] and Luis Pérez das Mariñas[21], who asserted their knowledge of the region and its waters on the basis of their experiences and collections of Portuguese and Castilian data[22].

This type of proposal was not in vain, as demonstrated by the Royal Decree of 13 October 1600 from El Escorial to Pedro de Acuña, governor of the Philippines, emphasizing the benefits of pacifying and evangelizing kingdoms of China, Cambodia, Champa and Siam, and of preventing the passage of the English and Flemish, who had taken possession of the Straight of Singapore[23]. These projects resulted in navigation through the South China Sea, which was considered to be under Spanish jurisdiction; specifically under that of the Manila Royal Audience.

5. Traders and Pirates

One of the clearest consequences of the Spanish colonization of the Philippines was that of stimulating an important migration of Chinese from the Province of Fujian to the Island of Luzón[24]. It also opened a new long distance commercial route that joined the Asian coast to Acapulco, once Andrés de Urdaneta discovered the return route (*tornaviaje*) in 1565 [25]. By the end of the 16th century, Manila had already become a

[18] This work was a best-seller in its time. Printed in Rome and Madrid in 1585 and again in 1586, after being revised, it was developed into 38 editions in Spanish, Latin, English, French, Italian, German and Dutch up to 1600. The *Historia* was reprinted in 1990 as number 6 of the *Biblioteca de Viajeros Hispánicos* (Miraguano Ediciones & Ediciones Polifemo).
[19] AGI, Filipinas, 18B,R.7,N.73
[20] AGI, Filipinas, 18B, R.7, N.68.
[21] AGI, Filipinas, 19, R.1, N.1. Cat. 5633-5635.
[22] Cat. 3243. AGI, Filipinas, 34, N.69; Cat. 5794. AGI, Filipinas, 19, R.1, N.7; Cat. 4158. AGI, Filipinas, 18B, R.3, N.20; Cat. 4180. AGI, Filipinas, 6, R.7, N.106; Cat. 4730. AGI, Filipinas, 18B, R.5, N.45.
[23] AGI, Filipinas, 329, L.1, F.25R-26R.
[24] Gil, Juan, *Los chinos en Manila, siglos XVI-XVII,* Lisboa, 2011.
[25] For two centuries, up to 1766, no ships sailed from Spain to the Philippines. The "galleon of the Pacific" (*galeón del Pacífico*), known also as *nao* or *galeón de Filipinas* or *de Manila* and *nao de la China,* which initiated its regular and exclusive annual route in 1573, stopped the transpacific exchanges in

commercial port regulated from Spain[26] and with relationships with all the Asian kingdoms. This control was maintained throughout Spanish rule there[27].

The Spanish devised a commercial strategy that aimed to: a) encourage and increase the arrival of ships in Manila; b) obtain direct access to the Chinese coast for Spanish ships; and finally, c) to establish a port on the latter coast with a status similar to the one in the Portuguese territory Macao[28]. Thus it is not through happenstance that since early times, the King was asked to create naval dockyards to provide the Castilians in the Philippines with a maritime fleet adapted to the characteristics of those waters and to the coasts of that region which would enable them to trade as well as to carry out expansive military enterprises[29]. Similarly, as is evident from the letters, petitions, and files of secular people seen at the Council of the Indies, the Spanish regulated commerce from the very beginning of their occupation[30].

Only the first of the three objectives outlined above was achieved. Although it was forbidden to sail outside the Chinese kingdom without a special license, Chinese boats coming from Canton and other ports, with more than two hundred men aboard, including the crew and the traders, were trading intensely with islands like Mindanao, even before the arrival of the Spanish. But Legazpi managed to ensure that these Chinese boats also visited the recently-founded Manila. Before long, a numerous community of Chinese *sangleyes,* established themselves in the Philippines.

The Portuguese in Moluccas and Macao tried to stop this growing commercial stream, but it was impossible. “The Chinese or *sangleyes,* great traders and very greedy people came to the sweet Spanish silver”, said Fray Ginés de Quesada, whose works were

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1815, once Mexico (the *Nueva España*) became independent. See AA.VV. *El galeón del Pacífico. Acapulco-Manila 1565-1815,* cit.

[26] *Consulta del Consejo sobre el comercio con China*. AGI, Indiferente, 79, N.15.

[27] *Expedientes, consultas y acuerdos de la Junta especial mandada formar en el Consejo de Indias para estudiar la mejora del gobierno, comercio y navegación de las Islas Filipinas, 1768-1769*. AGI, Ultramar, 641.

[28] Copy of a letter of Juan Bautista Román, overseer of the Royal Treasury to the Council of the Indies reporting on many points, including his future travel to China with several soldiers with the purpose of trying to open trade and enabling Christians to travel there. AGI, Filipinas, 29, N. 47.

[29] The same Miguel López de Legazpi insisted on this question in a letter to King Phillip dated 25 July 1570. AGI, Patronato 24, 22. Alonso Sánchez would also insist on the necessity of building a shipyard in Luzon in later years. He even wrote a treatise on the subject: *Papel de advertimiento que dio el Padre Alonso Sánchez sobre la fábrica de los Navíos del Mar del Sur, y de las ventajas que resultarían de que se hiciese en las Islas Filipinas por la mejor proporción de Maderas, y otros materiales que havía, y con más abundancia que en el Puerto de Realejo* (AGI, Patronato 260, 2, 46, y AMN Colección Fernández Navarrete, XVIII, fol. 128).

[30] AGI, Filipinas, 34. Documents which were in this file and have been transferred to other files: [1602] Documents which should be part of a file on the Philippines trade:…transferred to *Filipinas, 35 N. 47 (1618).* Printed memorial of Martín Castaño, attorney general of the Philippines, on the importance of retaining these islands: transferred to *Filipinas, 27 N. 107.*

written in 1631, but published after his death (as a martyr in Japan) in 1713[31]. Manila became a commercial centre for the traffic of spices and products coming from China and Japan. Silver constituted more than ninety percent of the shipping records from Acapulco to Manila[32].

The commercial activity, with or without a license, of the inhabitants of the coastal areas which were unavoidably turned seaward, as in the case of Fujian, attracted piracy, which exploded there with force in the first half of the 16th century. That was the first of the three great periods of piracy that beset the Chinese coasts as a result of the *Ming* restrictions to maritime trade.

Right from the beginning, the Castilians were aware of the restrictions imposed and the smuggling that the restrictions generated. In any case, piracy in the waters surrounding the Philippines was a *modus vivendi* for many people and could never have completely disappeared. It was revived each spring and summer when the Chinese boats coming from the Celebes, Malacca, Borneo and Java were pushed by the south-eastern monsoon. It moved to the north and almost disappeared during the winter months, when only the boats coming from the Ryukyu Islands sailed towards the seas of Surcomo[33].

On occasion, the Chinese and Spanish authorities would communicate in order to fight notable pirates. This occurred, for example, in the case of the famous Limahon who attacked Manila without success in 1574. On the 8th of April, only four days after the pirate had fled, the Chinese Captain Omoncon arrived in Luzon, in pursuit of the pirate for his misconduct on the Chinese coast. The interim governor of the Philippines, Guido de Lavezaris, welcomed him with pleasure and committed to capturing the pirate in order to turn him over to the Chinese authorities, dead or alive. The interim governor took advantage of this opportunity to make Omoncon agree to transport, in his imperial boat, an envoy from the Castilian colony in Manila to Fujian.

This group, led by the Augustine monk Martín de Rada, was the first entrance of Spaniards from the Philippines into China. It should be recalled that it was absolutely forbidden for strangers ("barbarians") to enter mainland China without a special

[31]Fray Ginés de Quesada, *Exemplo de todas las virtudes y vida milagrosa de la venerable madre Geronyma de la Assumpción,* Imprenta de la Vda. de Miguel de Ribera, México,1713. Notwithstanding the subject matter of this work, which exceeds six hundred pages, we find ample references to the history of the discovery, occupation and description of the Philippines in chapters I and II of the Part Fourth (*Libro Cuarto)*. The quotation appertains to chapter I and it has been taken from Trabulse, E., "Cartografía del Pacífico 1522-1792" *El Galeón del Pacífico…,* cit., pp.51-54.

[32] Yuste, C., "El galeón en la economía colonial", *El Galeón del Pacífico…,* cit., pp. 91-111, en p. 104. Until the 18th century, the Spanish minted silver became the currency for any transaction with Chinese traders, not only in the Philippines. See, Hubbard, C., "Monedas de plata en los galeones del Pacífico", *El galeón del Pacífico,* cit., pp.153-175.

[33]Folch, Dolors, "Piratas y flotas de China según los testimonios castellanos del siglo XVI", at http://www.ugr.es/~feiap/ceiap1/ceiap/capitulos/capitulo17.pdf.

license from the governors of the coastal towns, who were required to notify the emperor. Those licenses were limited to specific commercial activities at the port and severely restricted freedom of movement. Trespassers and those collaborating with them paid with their lives.

The extensive account of the voyage produced by Martín de Rada[34] was one of the documents that later contributed to the *History of the Great Kingdom of China* written by Fray Juan González de Mendoza. Rada and his companions were welcomed and celebrated during their months in Canton and other coastal areas, but their initiatives to establish regular relationships and to preach the Gospel freely were postponed by the Chinese *ad calendas graecas,* while they waited in vain for the handover of Limahon, who had slipped away from the trap the Spanish had set for him. Meanwhile, the Portuguese governor of Macao spread rumours that Rada and his travel companions were spies. The same, or worse, happened to the successive missionaries who arrived at the coast with the same objective.

The control of commerce and smuggling, and the fight against piracy were the principal activities of the Castilians in the Philippines after their settlement there. Both activities required jurisdiction over the seas, as well as, the awareness that the waters surrounding their territories were under their control and they were not required to ask anyone for any permission. The imperial fleets, on the other hand, were fixed to their own coast with the primary purpose of blocking the arrival of ships that did not have the special license and preventing smuggling and piracy along its extensive coast.

6. Boundary treaties with Portugal in the 18th century

Around the mid-18th century, Spain and Portugal agreed to delimit the boundaries of their possessions in America and Asia in treaties.

The Treaty of Limits was signed in Madrid on 13 January 1750 during the reign of Ferdinand VI of Spain. The Treaty acknowledged the Castilian excesses in East Asia, and counterbalanced them with those of the Portuguese in South America, thereby resolving those matters. Article 2 established that “the Philippines and adjacent islands belonging to the Spanish Crown will belong to it forever, regardless of any claim that could be made against it by the Portuguese Crown on the basis of what was determined in the said Treaty of Tordesillas, and despite the conditions mentioned in the agreement concluded in Zaragoza on 22 April 1529, and without any mention by the Crown of Portugal about the sale price registered in that document”.[35]

The treaty had a short life, however, because of the controversies that its application in American territories generated. It was annulled by both parties by means of the

[34] *Relación verdadera de la China'. Traída por el padre Alonso Sánchez*. AGI, Filipinas, 79, N.15.

[35] Del Cantillo, A., *Tratados, convenios y declaraciones de paz y de comercio que han hecho con las potencias estranjeras los Monarcas españoles de la Casa de Borbón desde el año de 1700 hasta el día,* Imprenta de Alegría y Charlain, Madrid, 1843, pp. 400-408.

Treaty of El Pardo, on 12 February 1761[36]. Some years later, the preliminary boundary treaty signed at San Ildefonso on 1 October 1777, confirmed in its article 21, that the King of Portugal "renounced on his own behalf and on behalf of his heirs and successors any right that he may have or claim to have regarding ownership of the Philippines and other islands that the Crown of Spain possesses in those regions"[37].

7. Paragua (Palawan)

The Spanish Crown had conceived of the southern limits of the Philippines as including Paragua (Palawan), Jolo archipelago, and North Borneo, which were loosely under the rule of the Sultan of Jolo, as a result of a complex system of alliances with the local chiefs (*dattos*). Nevertheless, Spanish presence in these territories was sporadic until the middle of the 18th century due to the concentration of the colonization effort in the northern islands, especially in Luzón.

Paragua had already been approached in 1521, by the "Victoria", the ship from Magellan's expedition that successfully concluded the first circumnavigation of the earth[38]. One century later, in 1622, the Augustine monks tried to settle in the northern area of the island[39]. Forty years later, in 1662, Fray Bartolomé de Letona printed Puebla (*Nueva España*) a book of more than four hundred pages[40] which included a "prologue and description of the Philippines", as well as some descriptions of itineraries departing from the port of Manila. On the third of these itineraries, bound for Goa, the author, after mentioning Luban and Cuyo, goes on to say: "Twenty five leagues to the West, then Southwest Northeast, in 8 degrees and a half up to ten and a half, among many islets, lies Paragua, a narrow island with a perimeter of more than

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[36] *Ib.,* pp. 467-468.

[37] *Ib.,*pp. 537-547.

[38] The event was described by Francisco Albo, one of the survivors of that expedition, in his logbook (*diario de a bordo*): "From here we departed and went to west-southwest and to the southwest and to the west until we took an island, in which there were very few people, named Quayacán. Here we emerged from its northern part, and asked for the island of Poluan in order to get rice supplies, because one can find a lot of it there.…thus, we went west-northwest, and we stumbled upon the cape of the island of Poluan; afterwards we went to north quarter of the northeast, sailing along the coast up to a village named Saocao, and there we made peace, and they were moors, and we went to another village, inhabited by kaffirs, and there we bought plenty of rice and were therefore able to stock-up very well; and this coast runs northeast-southwest and the cape of the northeast side is in nine degrees and a third, and it is in eight degrees and a third from the southwest part; and so we went to the southwest until the cape of this island, and there we encounter an island and next to it there is a shoal, and in this route and along Poulan there are many shoals…".The Albo's *Derrotero* can be found in AGI, Papeles del Maluco, años 1519 a 1547, legajo 1º, Patronato 54, nº 5. Reproduced by Fernández de Navarrete, M., *Colección de los viajes y descubrimientos que hicieron por mar los españoles desde fines del siglo XV.* In 1989 it was published, with other documents concerning *La Primera Vuelta al Mundo* contemporary to the facts, by Miraguano Ediciones & Ediciones Polifemo, as number 5 of its *Biblioteca de Viajeros Hispanicos*, pp. 67-110, pp. 82-83.

[39] Cangas de Argüelles, F., "La isla de Paragua", *Boletín de la Sociedad geográfica de Madrid,* 33 (1887), pp. 208-243.

[40] Fray Bartolomé de Letona, *Perfecta Religiosa,* Imprenta de Juan de Borja, Puebla, 1662.

one hundred leagues: with a Spanish garrison, and whose mayor is the superior judge (*justicia mayor*)"[41].

Regardless of this situation and the fact that the island was possibly under the authority of the Sultan of Jolo, Spain managed to obtain, the cession of all the territories it had in the great Paragua and the small island of Balava (Balabac) through a treaty of peace and amity concluded in 1705, when the Philippines was governed by Domingo de Zabalburu[42].

Nevertheless, the cession did not take place immediately. The Sultan himself, who had requested missionaries in 1736 when Francisco Valdés was governor of the Philippines, was forced to seek refuge in Manila in 1749 where he converted to Catholicism[43].

Once he recovered his throne with the help of Spain, his faith and promises weakened and it was necessary to insist on compliance. The marquis of Ovando managed to do this by taking advantage of new domestic conflicts between Borneo and Jolo[44]. A letter sent by the Sultan to Governor Ovando in 1752 reads: "I give forever to the King of Spain the island of Paragua, together with the small island of Balabac, which I would never surrender to any other King, even if I were to receive 400.000 pesos for it, and the willingness with which I give them to him is such that it feels as if they were a mere leaf from a tree"[45]. To ensure possession, and that the leaf was not carried away by the wind, Ovando sent Antonio Fabeu Quesada with warships and soldiers. He reported this in 1753 to the Council of the Indies and forwarded evidence of the agreement by the authorities in Manila regarding this taking of possession[46].

As of that moment, there were many maritime expeditions in the area around the island of Paragua[47], with the aim of controlling the adjacent seas[48]. A navy was established to prevent any kind of attacks[49].

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[41] *Ib.,* par. 25. Reproduced in Trabulse, E., "Cartografía del Pacífico 1522-1792" (*El Galeón del Pacífico…,* cit., pp. 46-50.
[42] AHN, Ultramar, 5354.
[43] AGI, Filipinas, 155, N. 7.
[44] Letter of the marquis of Ovando, governor of the Philippines, with an extract, reporting to have sent an ambassador to the King of the Isle of Borneo, to inform to him of the treachery of the King of Joló, Fernando I, to free the trade of the islands, to ask for the cession of the Isle of Paragua and sending a gift. Sent with royal order of 20 March 1754. AGI, Filipinas, 156,N.4.
[45] AHN, Ultramar 5352, caja 1, documento 1, nº 65.
[46] *See also* File of the letter of Pedro Manuel de Arandia on the Isle of Paragua. It contains: Letter from Pedro Manuel de Arandia Santisteban, governor of the Philippines, reporting on the survey expedition to the island of Paragua and the bad results and events, the loss of many lives and captivities, the loss of vessels and implements of war and the ill-fated enterprises from 1705, when the sultan of Jolo ceded the Isle of Paragua and another little island named Balaba (*sic* instead of Balabac). He finds it difficult to build a fortress in this island. He adds: a) Testimony of the proceedings concerning the island of Paragua. Manila, 12 July 1757; b) Report of the public prosecutor. Madrid, 14 March 1759. AHN, Ultramar 5354.
[47] Letter of the royal officials of the Philippines, Fernando Carabeo Bolaño y Manuel Suárez López, noting the return of the vessels dispatched by the Philippines government to the island of Paragua with the purpose of surveying its ports and locating a garrison. Manila, 1753-7-18. AGI, Filipinas, 192, N. 94.

8. Cartography of the archipelago in the 18th century.

The various expeditions[50] on the periphery of the archipelago and scientific development led to a remarkable improvement in the maps of the Philippines. The most famous map of the islands produced in colonial times was drawn by the Jesuit priest Pedro Murillo Velarde, dated 1734, (shortly before a method for measuring longitude came into existence thanks to the invention of John Harrison, the Yorkshire clockmaker)[51].

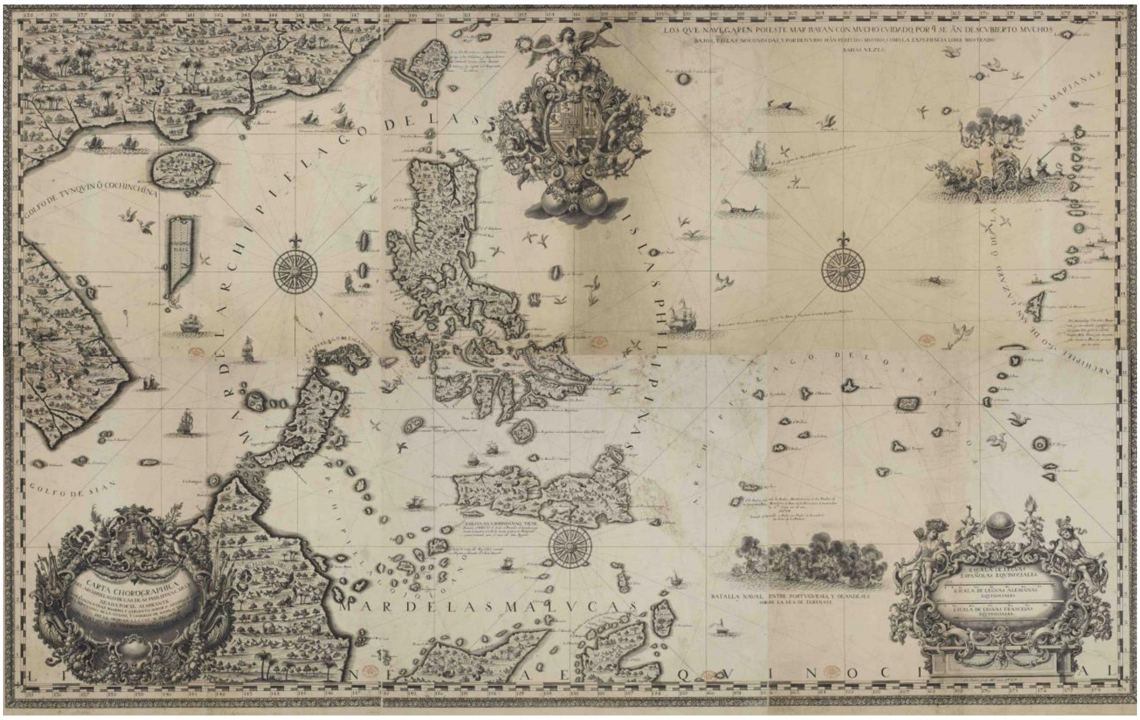
Until then, the official map of the islands was the one drawn by Romero and Ghandia (shown below).

[48] Letter of Simón de Anda y Salazar, governor of the Philippines, to Julián de Arriaga informing him of the news received from the Dutch coastguard relating to the passage of two English vessels which seemed to be headed to the island of Balabac, next to Paragua. AGI, Filipinas, 390, n. 21.

[49] Letter of Juan de Arechederra, bishop of Nueva Segovia, governor of the Philippines, with an extract reporting on the testimony and copies of letters expressing the reasons for discontinuing the measures to restore the Pintados navy. He speaks of the island of Bohol uprising and of the measures taken for its pacification, as well of the vessels dispatched by the governor of Zamboanga to the lands of the *tirones*. It includes: a) Duplicate of the letter of Juan de Arechederra reiterating its acknowledgement of the receipt of the royal cedula, and accompanying copy of the letter and the entire testimony of the proceedings executed by his predecessor for the reestablishment of the navy of Pintados; he adds that new measures, weaponry and more to be pursued in light of the news received regarding the tirones moors and of the attempt to revolt Bohol Island, in the island of Bohol, within the jurisdiction of Cebu, had resulted in new measures, weaponry and other were required. Manila, 29 December 1746; b) Duplicate of the letter of Juan de Arechederra dispatching testimony of the meetings celebrated on the restoration of the navy of Pintados and noting the receipt of the cedula on 23 July 1744, which his predecessor neglected to do. Manila, 22 May 1746. Transfer of the file formed in accordance with the orders on the restoration of the navy of Pintados. Manila, 16 July 747. Transfer of the file related to the news on the *tirones* moors received by the mayor (alcalde mayor) of the province of Tayabas and to the loss of the boats (champanes) of the Armada dispatched against the rebels in the island of Bohol, province of Cebu. Manila, 8 July 1747. One of the transfers dated 27 July 1747 was duplicated. AGI, Filipinas, 453, N.2

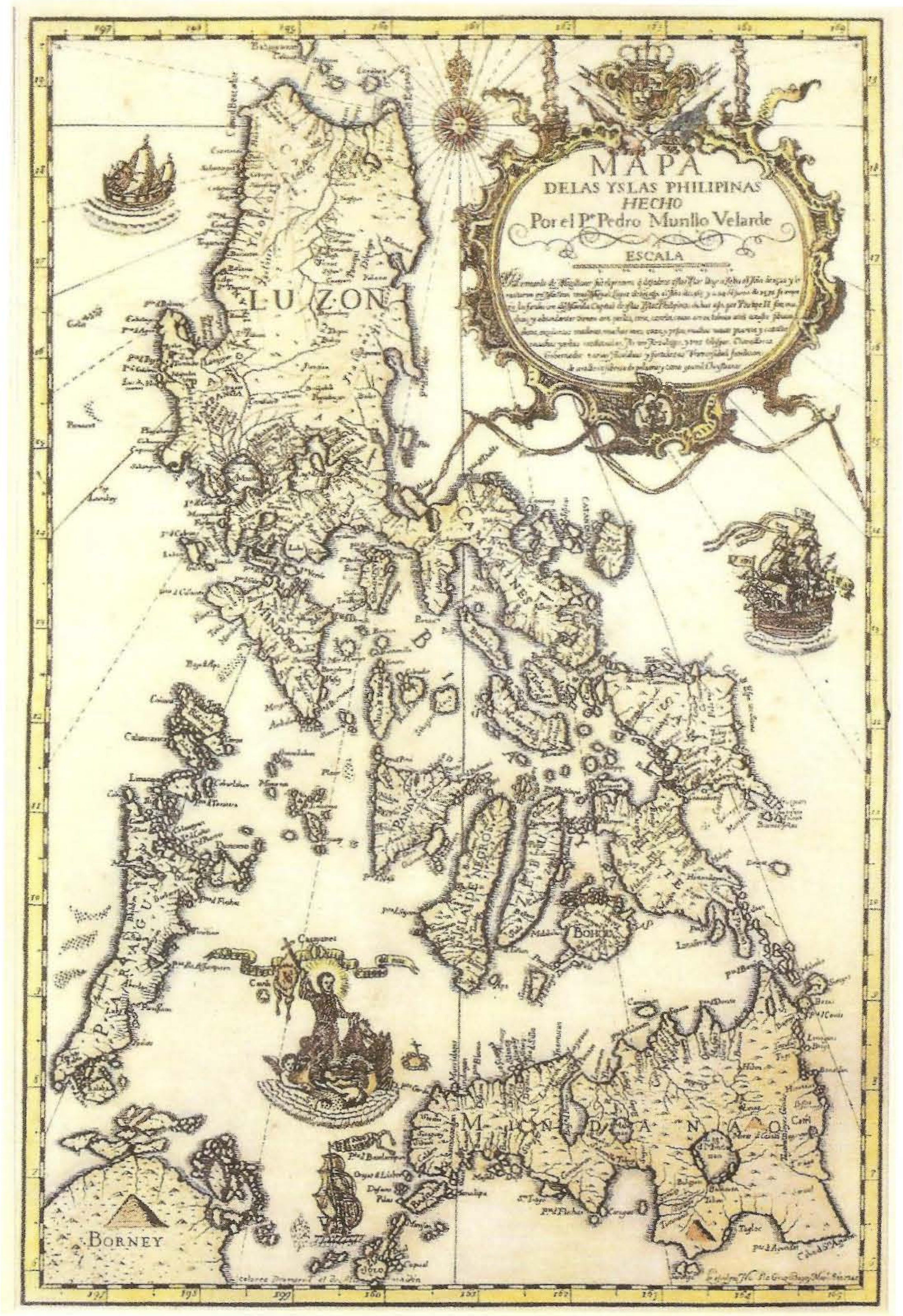
[50] We can mention, as an antecedent, the long journey of General Lucas Mateo de Urquiza along the China sea and the Japanese coasts in 1689 , AHN, Ultramar, 5253 (this dossier has four boxes). The original in AHN,OSUNA, CT.54, D.6

[51] Pedro Murillo Velarde published in Madrid, in 1752, a *Geografía histórica* which is a large memorial on the Philippines.



Francisco Diaz Romero and Antonio Ghandia. 1727. Carta Chorographica de Archipielago de las Islas Philippinas [Chorographic map of the Archipelago of the Philippines]. Manila, 1727.

Murillo's "Map of the hydrography and chorography of the Philippine Islands" (*Carta hydrographica y chorographica de las Yslas Filipinas*), printed at the order of the King of Spain, was known as the first exact map of the archipelago. As noted on other European maps that were based on it, it was designed to guide ships through the archipelago's dangerous coral reefs. The map was printed in Manila by Tagalog craftsmen (Nicolás de la Cruz Bagay) and it shows the Philippine Islands, including Scarborough Shoal (Panacot), Paragua, Jolo and a part of Borneo Island, on a much larger scale than any earlier map.



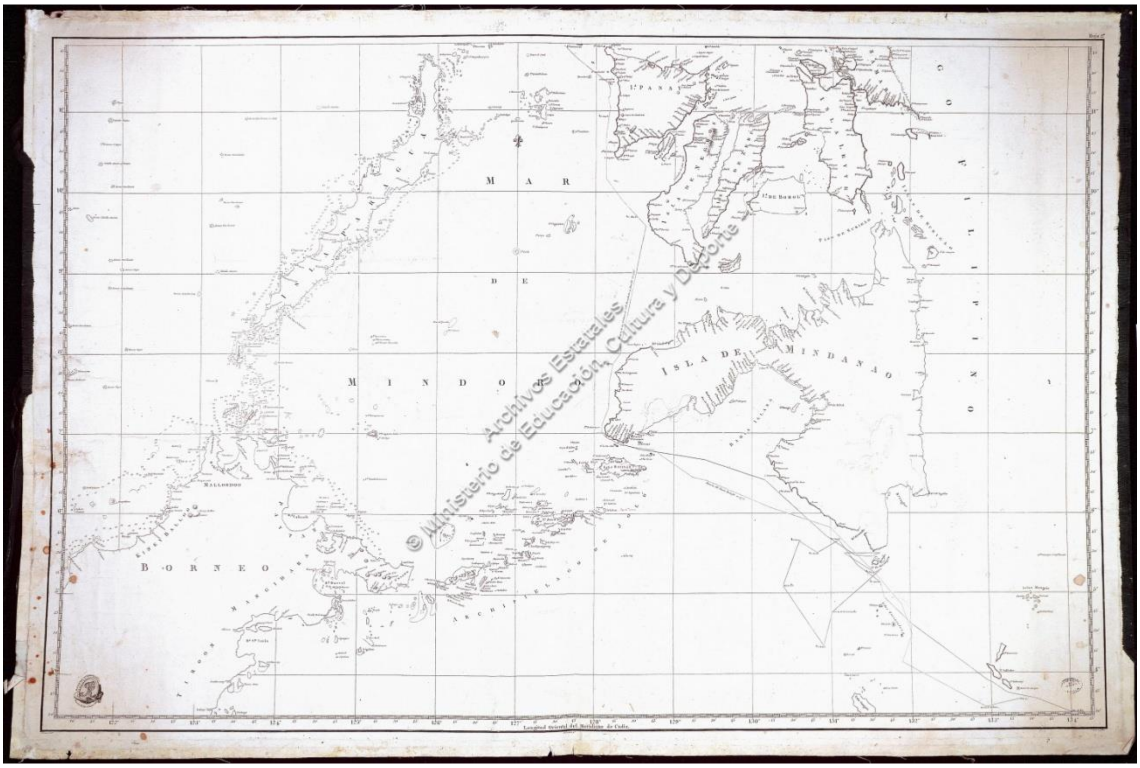
Pedro Murillo Velarde, *Carta hydrographica y chorographica de las Yslas Filipinas* [*Map of the hydrography and chorography of the Philippine Islands*], 1734. Please go to the following link to see the map at a larger scale and with significantly greater detail: http://www.wdl.org/es/item/10089/view/1/1/#view=seadragon.

As noted above, this Murillo map was used by European cartographers who acknowledged its importance. One of the many examples is shown below.

Carte des isles Philippines [Map of the Philippine Islands]. Dress'ee sur la carte Espagnole du R. P. Murillo de Velarde, 2e [Based on the Spanish map of R. P. Murillo de Velarde, 2nd. ed]. Paris : Chez Didot, 1746-1770.

Obviously, scientific knowledge, especially that of the seas, improved throughout the 18th century, in line with the expeditions for coastal reconnaissance, which were needed to organize other expeditions to punish, intervene, strengthen and colonize the islands and archipelagos of Paragua, Jolo and Borneo. The infinite number of maps in the Spanish archives[52] enabled general maps of the Philippines to be developed throughout the 18th century. These were later used to produce an important map in 1801 entitled "Map situating the islands of Panay, Guimaras, Negros, Cebú, Bohol, Leyte, Mindanao, Paragua, Borneo and the Jolo archipelago" (shown below).

[52] http://www.bibliodef.es/abnetopac/BaratzCL/O7224/ID771e2607?ACC=101.



Map showing the islands of Panay, Guimaras, Negros, Cebú, Bohol, Leyte, Mindanao, Paragua, Borneo and the archipelago of Jolo, 1801.

Jolo and Borneo frequently appeared within the limits of the Philippines, but outside the control of Spanish authorities, until halfway through the 19th century, when pressure from the United Kingdom and other European powers over the periphery of the archipelago forced the production of a clearer chart showing that the sea of Jolo and its islands (Jolo, Basilán, Tawi-Tawi…) belonged to Spain. This also corresponded with a greater Spanish presence in these areas.

9. Southern boundaries

Relations with the Sultan and the local *dattos* were often fraught with conflict on the islands and in the sea of Jolo. In the capitulations concluded in the palace of Jolo on 23 September 1836, the Governor of the Philippines offers to, in the name of the Crown, "restrain the peoples who rebel throughout the islands within the jurisdiction of Spanish law, which go from the western limit of Mindanao to Borneo, and Paragua…"[53]. Additional capitulations concluded on 27 August 1850 reaffirm the location of Jolo within the Philippine borders and the Sultan's waiver of the right to cede the land to any other powers.

A few months later, on 19 April 1851, the Sultan signed a certificate of submission which provided in its first article that: "the island of Jolo and its dependencies shall be

[53] *Gaceta de Madrid*, 1075 (8-11-1837), p.1.

incorporated into the Crown of Spain, which has been its only protector for the last centuries". The certificate also reiterates the location of Jolo within the Philippine borders (article VI) as well as, the Sultan's promise not to cede the territory to other powers (article II)[54].

The increasing threat that the expansion in the region of the British and other European powers posed on Spanish sovereignty, especially in the southern area of the archipelago, forced the government in Manila to reinforce control over the Visayas and to collect historical and cartographical data in order to defend the Spanish titles.

Thus, by a royal order of 17 March 1862, it was declared that all documents pertaining to Jolo and Borneo[55] were to be collected. By another royal order, dated 26 February 1867, a commission was created to screen the archives in Spain and abroad in order to clarify the rights of Spain over its possessions[56]. Pursuant to a third royal order, that of 5 February 1867 authorizing the creation of a commission on the islands to analyse the legal background of the Spanish rule over Jolo, the governor of the Philippines, José de la Gándara, sent a report on this topic prepared by brigadier De la Portilla and frigate captain Claudio Montero to Spain in 1868[57].

The reports of the commission created pursuant to the royal order of 26 February 1867 have been collected in a file composed of four boxes documenting Spain's historical titles and its conflicts in the region. The collection is the result of research at the General Archive of the Indies, of the Ministry of Foreign Affairs of Spain and the British Museum. In the summary of the final report of 15 October 1869, the commissioners noted that the Spanish titles are a result of the "exercise of non-disputed rule; not interrupted even by happenstance", that dates back three hundred years[58].

Thus, the Spanish commissioners emphasized the validity and application of the cessions of Paragua and Babalac made by the Sultan to Spain in the 18th century that were discussed above. In fact, in 1858, Spanish administration was effectively established in Babalac[59]. In 1872, the present capital of Paragua, Puerto Princesa, was founded and colonization was expanded. Both at Puerto Princesa and at Babalac, naval stations were established for defence and to combat pirates. With regard to Jolo, the commissioners concluded that the signing of capitulations and the certificate of submission ensured Spain's rights over this archipelago.

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[54]De la Escosura, P., *Memorias sobre Filipinas y Jolo redactadas en 1863,* Imprenta Manuel G. Hernández, Madrid, 1882, pp. 376-384.

[55]AHN, Ultramar, 5352, caja 3, documento 1, nº 7.

[56]*Gaceta de Madrid,* 59, 28 February 1867. See also AHN Ultramar, 5352, caja 2, documento 2, nº 28 y 29.

[57]AHN, Ultramar, 5352, caja 1, documento 1, nº 77.

[58]AHN, Ultramar, caja 1, documento 1, nº 65.

[59]De la Cavada, A., *Historia geográfica, geológica y estadística de Filipinas,* Imprenta Ramírez y Giraudier, Manila, 1876, p. 29.

The military expedition to Conchinchina (1858-1862), in which Spain accompanied France, should be mentioned here because the Spanish participation in this expedition was carried out with the forces stationed in the Philippines. Spain had expectations of gaining a port in the Gulf of Tonkin once peace was re-established.

10. Cartography of the archipelago in the 19th century

Parallel cartographic work was being developed in Portugal by the military engineer Francisco Coello de Portugal y Quesada. Coello had been asked to develop maps of the Spanish provinces and overseas possessions for inclusion in a voluminous geographical, statistical and historical dictionary directed by Pascual Madoz[60].

The first of the three maps dedicated to the Philippines was published in 1849, while the remaining two were published in 1852. Coello's cartographic material dedicated to the Pacific is important in two respects: From a geographical perspective, it allowed the 19th century society to learn more about their farthest colonies. And from a political perspective, it helped Spanish diplomats defend their rights against the desires of other European powers. Curiously, the maps of the overseas possessions were published much earlier than those of the metropolis. They were then circulated immediately in order to show the European states the powers they had to respect.

The first of Coello's maps is the most interesting one. It gathers on a smaller scale the cartographic information that appears in the others, depicting a general map of the Philippines and reaffirming in the margins the location of the borders endangered by the imperialist practices of the European powers. In fact, he draws the Batan Islands, the Sultanate of Borneo and Jolo and the Talautes islands (south of Mindanao) at a larger scale than that of the aforementioned general map.

Moreover, the map is made even more interesting by the inclusion of a legend with information on the political, social, historical and cultural reality of the islands, reminiscent of Buzeta's text[61].

Coello also includes information on his sources: "The works of Don Antonio Morata, provided by His Majesty's government to the Atlas Company, and which form the primary basis of this map, comprise much of the Archipelago in five large sheets on a large scale. The development of this work, which began in 1841 and concluded in 1851, relied upon all the works conducted by the Hydrographic Commissions that were intended to produce maps of the islands; other partial works verified at different times by officers and pilots of the navy and its forces; information filed with the Engineers Department and in the archives of the General Command [*Capitanía General*] of the islands; and as much more modern and precise data as could be gathered. Other data

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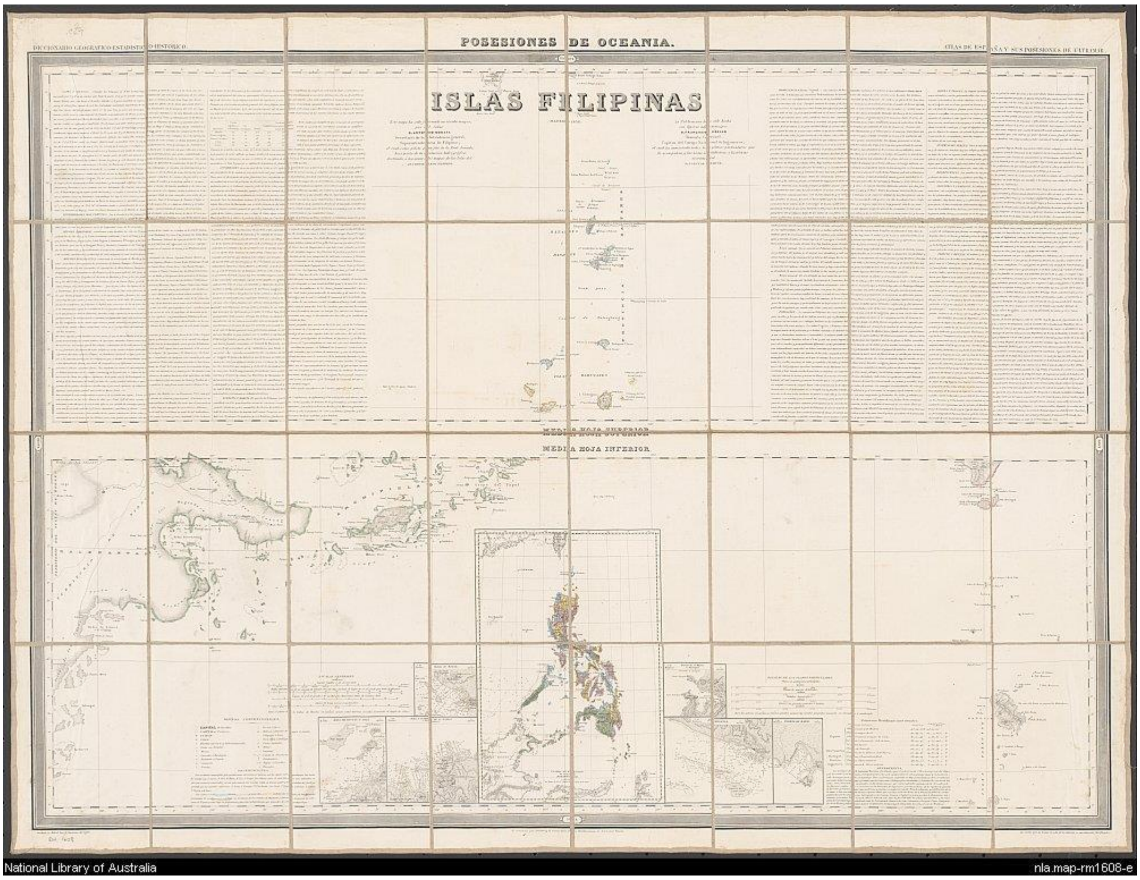
[60]Quirós Linares, Francisco (2009), «La cartografía de la metrópoli en el Atlas de España y sus posesiones de Ultramar (1847-1870), de Francisco Coello. Características, fuentes y colaboradores» Ería, 78:79, 65.

[61]Buzeta, Manuel et Bravo, Felipe, *Diccionario geográfico, estadístico, histórico de las Islas Filipinas*, Madrid, 1850.

filed in the Peninsula archives; all the letters published by the Hydrographic Collections of Spain, France and England; and other interesting and more recent documents were also consulted in order to produce and publish this map. Taking all of these into account, the Author of this Atlas has developed all the specific maps and has completed the archipelago by adding the entire province of Batanes, the islands of Calamianes, Paragua, Cuyos, Cagayanes, Borneo Island and its surroundings, the western part of the Jolo Archipelago, and all the islands south of Mindanao"[62].

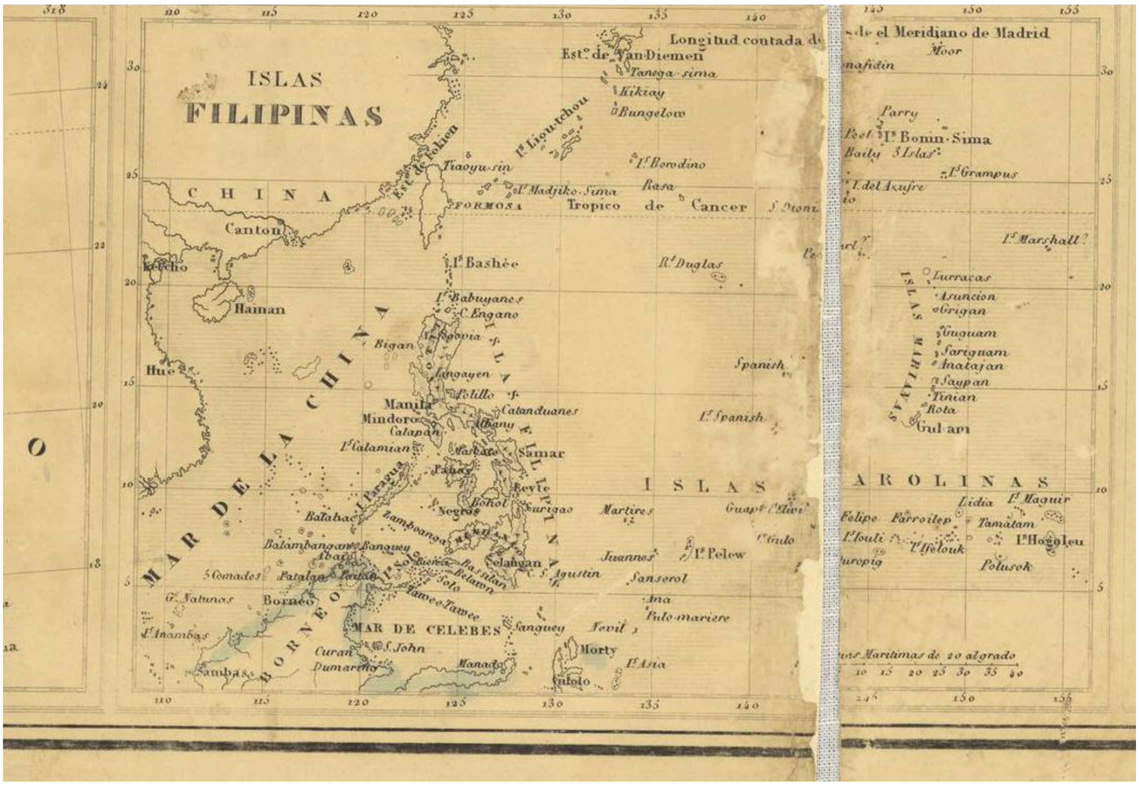


Islas Filipinas [Philippine Islands] / Este mapa ha sido hecho en escala mayor por el Señor D. Antonio Morata [This map was made in large scale by Mr. D. Antonio Morata. La publicación ha sido hecha con ligeras adiciones, por D. Francisco Coello [The publication has been made with minor additions by D. Francisco Coello]. Madrid: [s.n.], 1852.

The second Philippine map produced by Coello is dedicated to the islands of Luzón and the most northern Visayas. Coello reaffirms, once again, Antonio Morata's role in the design of the map, which stands out for the geographic quality of the interior areas.

In the third map, one can discern the neglect of the most southern islands for a long period of the Hispanic domination of the Philippines. This was only corrected when their conservation was endangered by the appetites of other European powers.

[62]Coello, Francisco, «ISLAS FILIPINAS», en *Atlas de España y sus Posesiones de Ultramar. Diccionario Geografico-Estudio-Estadistico-Historico*, Madrid, 1852, Advertencias.



La imagen corresponde al mapa compuesto por D. Pedro Martin de Lopez geógrafo é individuo de varias corporaciones científicas y literarias, y grabado en acero por Ramón Alabern [This image corresponds with the map produced by D. Pedro Martin de Lopez, geographer and member of various scientific and literary organizations, and engraved in steel by Ramón Alabern. 1852.

These maps are kept in the Spanish archives, together with most of the maps Coello refers to (see also the Annex to this report). Among them, there is one of the *Spratly Islands* (Kalayaan) specifically, which as with most of the material at the Naval Museum Library, probably comes from the *Depósito Hidrógráfico* (Hydrographic Collection)[63]:

Title:	Plan of the shoal: where the Royal Captain was lost 17th Decr. 1773 / Seen in the Royal Charlotte Capt. Clements 26 th. Novr. 1773; W.H.
Publisher:	[London]: Publish'd according to Act of Parliament by A. Dalrymple , Feb. 14th. 1785
Physical description:	1 map ; 29 x 21 cm, on a 64 x 50 cm sheet
Notes:	It pictures a sand shoal on the China Sea, which is part of the Spratly Islands salt mines Graphic scale 2 nautical miles [= 15,9 cm]. Oriented with half lis It indicates bathymetric probes, shores of bays and numerous rocks and shoals Insert: "Island & Shoals in China sea: in 11°0' N:S hip Rooke 1 st. Jany.

[63]http://www.armada.mde.es/ArmadaPortal/page/Portal/ArmadaEspannola/ciencia_museo/prefLang_es/02_museo-museo-naval--03_coleccion

170°/1", "Ship Rooke 2 Jany 17ºo'1". "Shoal seen by C. Clements 25 th. Novr. 1773"
Accompanied by: "Bay & Rivers of Ypoloté on Palawan or Paragua". "Bay called by the Natives, Dalawan, on the S.E. part of the Island Balabac"
In: Dalrymple, Alexander : "Charts for the East India Navigator". 1787?, [map. 114 c]

This map is filed at the *Biblioteca del Museo Naval de Madrid* [Madrid Naval Museum library]: http://www.bibliodef.es/abnetopac/BaratzCL/O7719/ID3ee62c3/NT5.

The presence of this map, drafted in English, among those compiled to defend Spanish interests against other European powers, especially the United Kingdom, is highly revealing. The map seems to link the Spratly islands (Kalayaan) to Paragua or Palawan, an island of the Philippine archipelago under Spanish domain.

11. End of Spanish sovereignty in the Philippines: the treaties with the United States of America (1898-1900)

As a consequence of its inevitable defeat in the war declared in 1898 by the United States of America, Spain was forced, through the Treaty of Paris signed on 10 December that year, to cede the Philippines[64].

In order to define and delimit the area, the second paragraph of article III constructs a polygon with sides formed by parallels and meridians, as proposed by the American 'negotiators'.[65]

The geometric figure included Paragua (Palawan) and the islands of the Jolo archipelago, but not those of Cagayán of Jolo and Sibutú. These were left outside because of insufficient information and expertise of the negotiators – not due to a deliberate political decision. In order to correct this, the Treaty of Washington signed on 7 November 1900 established that Spain ceded all title or right "to any and all

[64] *Gaceta de Madrid,* 3 May 1899.
[65] Ibid. Article 3:

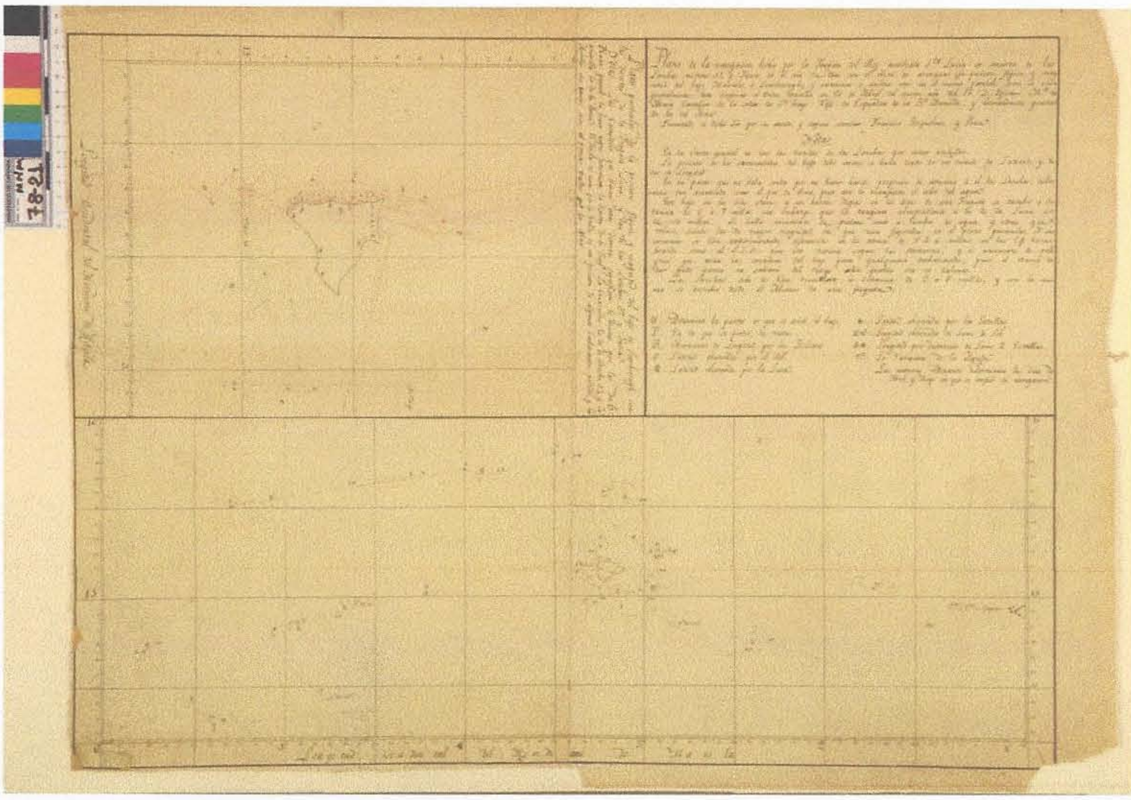
> A line running from west to east along or near the twentieth parallel of north latitude, and through the middle of the navigable channel of Bacchi, from the one hundred and eighteenth to the one hundred and eighteenth to the one hundred and twenty-seventh degree meridian of longitude east of Greenwich, thence along the parallel and forty-five minutes north latitude to its intersection with the meridian of longitude one hundred and nineteen degrees and thirty-five minutes east of Greenwich to the parallel of latitude seven degrees and forty minutes north to its intersection with the one hundred and sixteenth degree meridian of longitude east of Greenwich, and thence along the one hundred and eighteenth degree meridian of longitude east of Greenwich to the point of beginning.

islands belonging to the Philippine Archipelago, lying outside the lines described in Article III of [the Treaty of Paris]"[66].

The Treaty of Washington resolved the objection that might have been made regarding the inclusion of the Spratly islands (Kalayaan) and the Scarborough Shoal (or Panacot Shoal, *Bajo de Masinloc or Bajo Scarburo*, as they are also known) in the archipelago, on the basis of a strict identification of the Philippines with the 1898 polygon. As the parties signing the treaty acknowledged, those islands that had belonged to Spain were part of the Philippine archipelago.

Concerning Scarborough, Spain surveyed and exercised jurisdiction over this shoal as part of its possessions. Cartographic testimony of this can be seen in the 1734 Murillo Velarde map discussed in Part 8 of this report. It is also provided in the navigation (*derrotero*) map of the frigate *Santa Lucia* which, accompanied by two boats (*Number 57* and *Fama*) of the naval station (*apostadero*) of Manila, were ordered on 20 April 1800 by the Naval Commander-in-Chief, H.E. Ignacio María de Álava, to determine the position, shape and size of the Bajo Masingloc (Scarborough) and to verify the existence of another shoal in the same parallel as generally believed in those days. The order was immediately executed in the last days of April and the beginning of May. The result was a general chart and a specific map of the Bajo Masingloc, specifying its position, shape and size, as well as other details. The document was presented to the Naval Commander in Chief by Francisco Riquelme y Ponce, who commanded the expedition. An 1800 document specifically devoted to the Bajo Masingloc (Scarborough) was developed at the order of the Spanish naval authority in the Philippines and by vessels of the 'Armada'.

[65] *Gaceta de Madrid,* 236, 24 August 1901.



Carta General y Plano Particular de Bajo Masingloc o Scarborough, Francisco Riquelme y Ponce, 1800. Museo Naval, Madrid

Another document of the Depósito Hidrógráfico reflects Spain's exercise of its jurisdiction over Scarborough through the rescue of ships in danger near the hazardous shoal. It notes that in early September 1865, a corvette of the Spanish navy, the *Narvaez*, rescued an English ship, the *Eliza Benke,* which was aground in Bajo Masingloc (Scarborough)[67].

Madrid, March 19, 2014

Antonio REMIRO BROTONS

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[67] See *Anuario de la Dirección de Hidrografía,* Año IV, Madrid, Depósito Hidrográfico 1866, pp. 18-19

Annex

List and description of some maps of the Philippines in the Spanish archives.

I. Maps at the *Biblioteca del Museo Naval de Madrid* [Naval Museum Library, Madrid]

I. Map of the Spratly Islands (Kalayaan)

This map is included in a factual atlas, a collection of maps, with no heading at all. It is the only specific one in the military deposits. Judging by the date, it was produced before the islands were given Western nomenclature in the mid-19th Century by the first naval power at the time, the United Kingdom. In any case, the government of the Philippines knew the islands well. This is proven by the use of the navigation charts currently filed in the Spanish Archives.

Title:	Plan of the shoal: where the Royal Captain was lost 17th Decr.1773/Seen in the Royal Charlotte Capt. Clements 26th Novr.1773; W.H.
Editorial:	[London] : Publish'd according to Act of Parliament by A. Dalrymple , Feb. 14th. 1785
Descripción física:	1 map ; 29 x 21 cm, on a 64 x 50 cm sheet
Notas:	It depicts a sand shoal in the South China Sea, which is part of the Spratly Islands salt mines. Graphic scale 2 n.m. [= 15,9 cm]. Oriented with half lis It indicates bathymetric probes, depth contours and numerous rocks and shoals Insert: "Island & Shoals in China Sea : in 11°0' N:S hip Rooke 1 st. Jany. 170°/1", "Ship Rooke 2 Jany 17ºo'1". "Shoal seen by C. Clements 25 th. Novr. 1773" Accompanied by: "Bay & Rivers of Ypoloté on Palawan or Paragua". "Bay called by the Natives, Dalawan, on the S.E. part of the Island Balabac" In: Dalrymple, Alexander: "Charts for the East India Navigator". 1787?, [map. 114 c]

II. Paragua XVIII Century

1. Expedition sent by the Marquis of Ovando

Title:	Chart of Favean's Voyage: Reduced from the Original MS on a Scale of 7 luches to 1° Communicated by the late Monsr. D'Apres entitled ‘Particular Plane Chart of the Journey of the Armada dispatched in 1753 by the Marquis of Ovando Governor and General Captain of Yslas Philipinas under the command of D. Antonio Faven Quesada for the establishment of a garrison at the southernmost tip of the Isle of Paragua, survey of its coasts, rivers, channels, inlets, bays, anchorages, straits, streams, qualities of the seabed and other circumstances which can be observed at all time taken from the Observations and Logbook of the same Don Antonio Faven Quesada, General Commander of the Expedition, who dedicates it to the very distinguished Sr. Marquis of Ovando, Governor and General Captain of the said Yslas Philipinas, and President of the Real Audiencia of Manila’ / Engraved by T. Harmar [Mapa]
Publisher	[London : Publish'd... by A. Dalrymple, 1781
Physical description:	1 map. ; 45 x 60 cm
Notes:	It includes the island of Paragua (Palawan) and the southern part of the island of Mindoro

Scale found from a degree of meridian [= 7,5 cm]. Measured only in latitude (N 13°--N 7°)
It indicates bathymetric probes, shores of bays, shoals, quality of the seabed, direction of currents and the route of the Armada
In: "Pilote Oriental". 1785?, h. 23. It corresponds with Vol. X, T. II of the "Atlas Maritime Anglois"

2. Map completed on prior knowledge.

Títle:	Map including a part of the Isle of Paragua: with its islands, probes, and adjacent shoals / taken from various maps and logbooks of these seas by Dn. Pablo Verdote, current Captain of Marine and Commander of the galley Nuestra Señora de Loreto, who dedicates to Rdo. Padre Fray Gregorio de Sn. Agustín Calera, Prior and Minister of Doctrine of the town of Taytay and Provincial Vicar of this Archipelago
Edition:	25 April 1761
Physical description:	1 nautical chart: ms., col. ; 65,5 x 90,4 cm
Notes:	Scale found from 1º of latitude. Measured only in latitude. Oriented with lis in knot of rhumbs Manuscript with pen nib in black ink and coloured in watercolor green, yellow and grey It indicates depth contours, shoals and bathymetric probes

3. Balabac

Title:	Inlet of Balabac : In 7°42'47'' Latitude N. in the island of the same name, South of Paragua
Edition:	[17--?]
Physical description:	1 nautical chart: ms. ; 30'6 x 40'2 cm
Notes:	It includes graphic scale, without expressing the measure applied. Oriented with lis Manuscript with pen nib in black ink It indicates depth contours, shoals, anchorages and bathymetric probes

II. Paragua, XIX Century. There are plenty of examples, and many are also available in other archives.

Title:	Spherical chart of a part of the Isle of Paragua/ Made by the Dirección de Hidrografía; according to the works executed from 1850 to 1853 by D. Claudio Montero, Navy Lieutenant of the Spanish Marine, and by W. T. Bate [et al.] of the British Royal Navy from 1850 to 1854 Madrid, 1860; F. Bregante made and delineated it and engraved the letter; J. Estruch engraved (the map)
Publisher:	Madrid : Dirección de Hidrografía, 1860
Physical description:	1 map. ; 93 x 62 cm
Notes:	Graduated, longitude taken from the meridians of Manila and San Fernando Scale found from 1º latitude Comprising bathymetric analysis of the maritime zone next to the islands Hydrographic code to determine the quality of the seabed It includes the seal of the Dirección de Hidrografía at the bottom right

Title: Spherical chart of a part of the Isle of Paragua/ according to the works executed from 1850to 1853 by D. Claudio Montero, Navy Lieutenant of the Spanish Marine, and by W. T. Bate [et al.] of the British Royal Navy from 1850 to 1854 Madrid, 1860; F. Bregante made and delineated it and engraved the letter; J. Estruch engraved (the map)

Publisher: Madrid : Dirección de Hidrografía, 1860

Physical description: 1 map ; 89 x 59 cm

Notes: Scale found from 1º latitude [= 17,7 cm]. Coordinates related to the meridians of Manila (O 2°46'-E 0°30'/N 11°35'-N 6°30') and San Fernando (E 124°20'-E 127°40'). Geographical web from 1° to 1°. Oriented with lis
Relief presented by normal points
It indicates bathymetric probes, depth contours and shoals
Hydrographic code to determine the quality of the seabed
Explanatory Legend on the numbers of the probes and the elevation of the mountains
Seal of the Dirección de Hidrografía
In: Dirección de Hidrografía : "Costas de Africa en el Océano y Mares de Asia", 1860?, 36

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Title: Spherical chart of the Strait of Balabac: formed by the islands Paragua and Borney/ Made by the Dirección de Hidrografía according to the works of Wit. Bate, C. Parco, C. Bullock, W. Calber y E. Belcher, published by the London Depot in 1856. Madrid 1859 ; F. Bregante made and delineated it and engraved the letter; J. Estruch engraved (the map)

Publisher: Madrid : Dirección de Hidrografía, 1859

Physical description: 1 map. ; 89 x 58 cm

Notes: Scale found from 1º latitude [= 17'6 cm]. Coordinates related to the meridians of Manila and San Fernando (E 121°09'--E 124°24'/N 11°29'--N 6°30'--O 3°45'). Geographical web from 1º to 1°. Oriented with lis
Normal orography
It indicates bathymetric probes, depth contours and shoals
Hydrographic code to determine the quality of the seabed
Including the seal of the Dirección de Hidrografía
In : Dirección de Hidrografía :"Costas de Africa en el Océano y Mares de Asia", 1860?, [map.57]

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Title: Spherical chart and topographic map of the Philippines islands: based on information of the Hydrographic Deposit of Madrid published in 1808 and the one on the strait of San Bernardino 1816; the Survey of the island of Paragua, carried in November 1761 by Dn. Pedro Antonio de Cosio following orders of this superior government dated 20 October of the same year and the one of the strait between the island of Basilan and Plaza de Samboanga which was performed by Mr.Philibar, Commander of the French Division in the Asian Seas and aboard the frigate la Rhône in 1819; and also those of the Pilots Dn. Jose Navarrete Dn. Felis Dayor and others/ made under the direction of Dn. Yldefonso de Aragon, Engineer of the Royal Army

Edition: 15 April 1820

Physical description: 1 nautical chart in 2 sheets: ms., col., folded, mounted on canvass; in h. 67 x 80 cm or less

Notes: It appears washed in a wide range of colours
Manuscript signed, initialed and dated in Manila. With pen nib in black ink and coloured in watercolor
Scale determined by degree of latitude. Longitude East of the meridian of Cádiz. It appears graduated. Oriented with rose of sixteen winds and two lis
Relief presented by normal points
It indicates depth contours and bathymetric probes
It notes sailing directions

Title:	Western Coast of Paragua: Map of the rada of Culasian / Made by the Navy Lieutenant D.M. Anton in 1889; traced by Agapito Asunción [Map]
Physical description:	1 map. : ms., col., on canvass for maps 67,0 x 48,5 cm.
Notes:	Graphic scale of 1 mile divided in cords [= 18,6 cm] It mentions the coordinates of the hill of Sidang-dang, longitude respecting the meridian of San Fernando It includes bathymetric analysis of the rada of Culasian It informs on the different qualities of the seabed Document signed by Agapito Asunción It includes subsequent notes written with red ink

Title:	Second piece of the Map for the General of the Archipelago of Calamianes: ordered by the Superior General Commander of the Naval Station (*Apostadero*) of the Philippines Brigadier Don Manuel de Quesada / which was dispatched to Manila in June 1850 by the Navy second lieutenant don Claudio Montero Commander of the Hydrographic Commission and of the Division of Sutil Forces in those islands. It includes the Coast and the Anchorage (Surgidero) of Taitay in the coast of Paragua and much of the neighboring minor islands which complete the landfall to this head of the Province
Edition:	2 June 1850
Physical description:	1 nautical chart : ms., mounted on canvass ; 60'6 x 39'2 cm
Notes:	It encompasses Taytay until the island of Maytiaguid and adjacent islands Manuscript signed and dated in Culión. With pen dib in black ink It indicates coordinates according to meridian of Taytay. Oriented with half lis Relief presented by normal points It indicates depth contours, shoals and bathymetric probes Pencil hand-written note on the reception of the document by the Hydrographic Deposit Seal of the Dirección de Hidrografía It inserts: Island and little port of Apulit

Title:	Island of Calamianes and a part of Paragua: Philippine Archipelago; Sheet VI / based on works executed between 1850 and 1853 by the Hydrographic Commission under the command of the Navy Lieutenant D. Claudio Montero; Corrected and added in 1870 taking into account the works of the mentioned Commission executed in 1869 and those of W. F. Bate, of the British Royal Navy from 1850 to 1854.
Publishers:	Published under orders of the Admiralty by the Section of Hydrography Madrid 1871
Physical description:	1 nautical chart: ms., col., mounted on canvass; 110'5 x 70'5 cm
Notes:	Scale inferred from the meridian degree [= 33'8 cm]. It notes coordinates according the meridians of Manila and San Fernando Manuscript with pen dib in black and red ink Relief through shading It indicates bathymetric probes, depth contours, reefs and quality of the seabed Explanatory notes of the map and of the circumstances of its implementation

II. Maps from the General Military Archive (Archivo militar General) of Madrid

1. Knowledge of the South China Sea.

Title:	Map of Bajo de Plata [sic] with its island and rocks in the South China Sea/ Delineated Celidón de Ocampo year 1817 ; it is a copy from other [illegible] [Map]
Edition:	1817
Physical description:	1 nautical chart: ms., mounted on canvass; 40.8 x 34.5 cm
Notes:	Coordinates of 1 point referred to the meridian of Greenwich (E 117°37'/N 20°44'). Oriented with half lis in knot of rhumbs A signature illegible appears It indicates bathymetric probes and depth contours Explanatory note on zone of rocks where the ship Utrech broke The seal of the Engineers Command of Filipinas figures

Title:	Spherical chart of the South China Sea: encompassed between the island of Borney and the peninsula of Malacca / Made by J. de Lorenzo; engraved by P. Hortigosa; F. Bregante engraved the letter
Publisher:	Madrid : Dirección de Hidrografía, 1864
Physical description:	1 nautical chart: col. ; 65 x 102 cm
Notes:	Relief presented by normal points Hydrographic code to determine the quality of the seabed It indicates bathymetric probes It marks the phares through colour Ink seal of the Topographic General Deposit of Engineers Seal of the Dirección de Hidrografía

Title:	Spherical chart of the coast and the South China Sea: running between Cape Batangan and Formosa Channel with a part of the island of Luzon/ Made and delineated by Tomás Bryant; engraved by R. Alabern; F. Bregante engraved the letter
Publisher:	Madrid : Dirección de Hidrografía, 1862
Physical description:	1 nautical chart; 60 x 97 cm
Notes:	Longitude East of the Meridian of San Fernando Oriented with lis Hydrographic code to determine the quality of the seabed It indicates bathymetric probes Ink seal of the Topographic General Deposit of Engineers Seal of the Dirección de Hidrografía

2. Paragua, XIX Century (there are many examples; only the more general are mentioned).

Title:	Spherical chart and topographic map of the Philippine Islands: composed taking into account maps and charts of the Hydrographic Deposit of Madrid published in 1808 and the one on the strait of San Bernardino 1816; the Survey of the island of Paragua, carried in November 1761 by Dn. Pedro Antonio de Cosio following orders of this superior government dated 20 October of the same year and the one of the strait between the island of Basilan and Plaza de Samboanga which was performed by Mr. Philibar, Commander of the French Division in the Asian Seas and aboard the frigate la Rhône in 1819; as also those of the Pilots Dn. Jose Navarrete Dn. Felis Dayor and others/ made under the direction of Dn. Yldefonso de Aragon, Engineer of the Royal Army (map)
Edition:	15 April 1820
Physical description:	1 mapa : ms., col., mounted on canvass; 132.5 x 78.0 cm
Notes:	Scale found from 1º latitude[= 6'6 cm]. Coordinates referred to the meridian of Cádiz. Oriented with lis in rose of the winds Relief presented by normal points It indicates bathymetric probes and depth contours and also the track lines of the corvettes Descubierta and Atrevida in 1792 and by the vessel Berinjín in 1773 I The works taken into account for the realization of this document are mentioned in note Washed in various colours

Title:	Spherical chart of a part of the Isle of Paragua/ realized in the Dirección de Hidrografía according to the works executed from 1850 to 1853 by D. Claudio Montero, Navy Lieutenant of the Spanish Marine, and by W. T. Bate [et al.] of the British Royal Navy from 1850 to 1854 Madrid, 1860; F. Bregante made and delineated it and engraved the letter; J. Estruch engraved (the map)
Publishers:	Madrid : Dirección de Hidrografía, 1860
Physical description:	1 nautical chart ; 92 x 61 cm
Notes:	Scale found from 1º latitude [= 17,7 cm]. Coordinates related to the meridians of Manila (O 2°46'-E 0°30'/N 11°35'-N 6°30') and San Fernando (E 124°20'-E 127°40'). Oriented with lis Relief presented by normal and bounded points It indicates bathymetric probes, expressed in fathoms of 6 feet of Burgos, shoals and anchorages Hydrographic code to determine the quality of the seabed At the top: “Sheet number 263” Dry Seal of the Dirección de Hidrografía and seal of the Topographic General Deposit of Engineers

Title:	Map of the islands of Paragua and the Calamianes
Publishers:	[Manila, Binondo, Calle de Anloague Núm. 6] : Lit. de M. Perez hijo , [1882]
Physical description:	1 map ; 61 x 42 cm
Notes:	It comprises also the island of Balabac Coordinates referred apparently to the meridian of San Fernando (E 123°-E 127°36'/N 14°25'-N 07°36') Relief presented by normal points

Place and date of publication taken from the atlas cover
It indicates the provincial borders, as well as the villages whose parish belong to the order of the barefooted Augustine monks
It belongs to the "Estado General de la Provincia de S. Nicolas de Tolentino de Agustinos Descalzos de Filipinas...", corresponding with "sheet[3]"

Title:	Map of the anchorage from the Isle Rasa to Bay of Mantanguin / realized for the memorial written in April and May 1871 by the survey commission of the Isle of Paragua
Edition:	1871
Physical description:	1 nautical chart : ms. ; 42,5 x 66,9 cm
Notes:	It indicates bathymetric probes, expressed in fathoms and tenths It indicates the toponomy of the main features of the coast Explanatory note on the tidal ranges

Title:	Map of the port of Talindac on the NW coast of the island of Paragua/ executed in 1877 by the Navy Lieutenants D. Federico Ardois y D. José Romero ; E. Fungairiño engraved it, F. Serra engraved the letter [Map]
Publishers:	Madrid : Dirección de Hidrografía, 1880
Physical description:	1 nautical chart ; 48 x 35 cm
Notes:	Coordinates of one point of the port referred to the meridian of San Fernando. Oriented with rose of eight winds Relief presented by normal points It indicates bathymetric probes, as well as track lines to be follow to arrive at port Hydrographic code to determine the quality of the seabed It inserts a perspective of a part of the coast

III. Map Library of the Geographical Center of the Army (Cartoteca del Centro Geográfico del Ejército)

1. Paragua

Title:	Spherical chart and topographic map of the Philippines Islands: composed taking into account maps and charts of the Hydrographic Deposit of Madrid published in 1808 and the one on the strait of San Bernardino 1816; the Survey of the island of Paragua, carried in November 1761 by Dn. Pedro Antonio de Cosio following orders of this superior government dated 20 October of the same year and the one of the strait between the island of Basilan and Plaza de Samboanga which was performed by Mr. Philiber, Commander of the French Division in the Asian Seas and aboard the frigate la Rhône in 1819; as well as those of the Pilots Dn. Jose Navarrete Dn. Felis Dayor and others/ made under the direction of Dn. Yldefonso de Aragon, Engineer of the Royal Army (map)
Edition:	15 April 1820
Physical description:	1 map : ms., col., mounted on canvass; 132.5 x 78.0 cm
Notes:	Manuscript signed, initialed and dated in Manila Scale found from 1º latitude [= 6'6 cm]. Coordinates referred to a nonw specified meridian (E 122º-E133º/N22º-N4º). Geographical web from 1º to 1º. Oriented with rose of sixteen winds and lis Relief presented by normal points

Bathymetric probes
It indicates shoals and anchorages
It marks through colours the provincial division of the Philippines islands, and track lines of the corvettes Descubierta and Atrevida, belonging to the Malaspina expedition, and of other Spanish vessels
Title framed in cartouche

Title:	Map of the port of Talindac on the NW coast oftje island of Paragua/ executed in 1877 by the Navy Lieutenants D. Federico Ardois y D. José Romero ; E. Fungairiño engraved it, F. Serra engraved the letter [Map]
Publishers:	Madrid : Dirección de Hidrografía, 1880
Physical description:	1 nautical chart ; 48 x 35 cm
Notes:	Coordinates of one point of the port referred to the meridian of San Fernando. Oriented with rose of eight winds Relief presented by normal points It indicates bathymetric probes, as well as track lines to be follow to arrive at port Hydrographic code to determine the quality of the seabed It inserts a perspective of a part of the coast

2. Borneo/Joló/Paragua

Title:	Spherical chart of the Strait of Balabac: formed by the islands Paragua and Borney/ Made by the Dirección de Hidrografía according the works of Wit. Bate, C. Parco, C. Bullock, W. Calber y E. Belcher, published by the London Depot in 1856. Madrid 1859 ; F. Bregante made and delineated it and engraved the letter; J. Estruch engraved (the map)
Publishers:	Madrid : Dirección de Hidrografía, 1859
Physical description:	1 map. ; 92 x 61 cm
Notes:	Scale found from 1º latitude [= 17'7 cm]. Coordinates related to the meridians of Manila (W 6º00'-W 2º 45'/N 11º 29'-N 6º 30') and San Fernando (E 121°09'--E 124°29'). Geographical web from 1º to 1°. Oriented with lis Relief by normal and bounded points. Bathymetric probes, depth contours and shoals Hydrographic code to determine the quality of the seabed Including the seal of the Dirección de Hidrografía At the top on the right: “245”

Title:	Spherical chart of the Archipelago of Jolo and a part of the island of Borney/J. Galván engraved it, P. Bacot engraved the letter (map)
Publishers:	Madrid, Dirección de Hidrografía, 1883
Physical description:	1 map;60 x 94 cm
Collection:	Philippine Archipelago
Notes:	Scale found from 1º latitude (17’5 cm).Coordinates referred to the meridian of Manila (W 2º 40’-E 1º 27’/N 6º 56’-N 3º 40’) and San Fernando (E 123º 20’-E 128º 37’). Geographical web from 1º to 1º. Relief by normal and bounded points. Bathymetric

probes, depth contours and shoals. Quality of seabed through alphabetic code. In note: “Variación en 1860 estacionaria”. Dry seal of the Dirección de Hidrografía

Title: Spherical chart of the Archipelago of Jolo and a part of the island of Borney/ S. Bregante made and delineated it; E. Fungairiño engraved it; F. Bregante engraved the letter (map)

Publishers: Madrid, Dirección de Hidrografía,1862

Physical description: 1 map: 60 x 95 cm

Notes: Scale found from 1º latitude (17’5 cm).Coordinates referred to the meridian of Manila (W 2º 40’-E 1º 27’/N 6º 56’-N 3º 40’) and San Fernando (E 123º 20’-E 128º 37’). Geographical web from 1º to 1º. Relief by normal points. Bathymetric probes, depth contours and shoals. Quality of seabed through alphabetic code. In note: “Variación en 1860 estacionaria”. Dry seal of the Dirección de Hidrografía. At the top on the right : “nº 478”

Title: Chart of the southern part of the Isle piragua and the northern part of Borney/Executed by the Dirección de Hidrografía following the most recent English works, Madrid, 1859; F. Bregante made, delineated and engraved the letter III 79, J. Estruch engraved it

Publishers: Ed. cor. Madrid, Dirección Hidrográfica, 1894

Physical description: 1 nautical chart; 92 x 61 cm

Collection: Archipiélago Filipino

Notes: Scale found from 1º latitude (=17’6 cm)Coordinates referred to the meridian of Manila (W 6º 00’-W2º 44’/N 11º 30’-N 6º 30’) and San Fernando (E 121º 10’-E 124º 25’). Geographical web from 1º to 1º. Oriented with a graphic of magnetic declination. Relief by normal and bounded points with Burgos feet. It indicates bathymetric probes, expressed in fathoms of six feet of Burgos, depth contours, shoals, phares, the track line to Hong-Kong and a hydrographic code to determine the quality and types of the seabed. Explanatory notes on reef barriers in different points. Dry seal of the Dirección de Hidrografía

3. Joló

Title: Chart of the island of Jolo and its adjacent islands / executed in 1874 by the Hydrographic Commission under the command of Frigate Captain Dn. Pascual Cervera; I. Tubau engraved it [Map]

Publishers: [Madrid : Baltasar Giraudier, 1877?] (Madrid : Lit. de J. Ma. Mateu)

Physical description: 1 map. : col. ; 35 x 48 cm

Notes: In: "Expedición a Joló 1876"
Editor and place of publication taken from the cover of the atlas. Date of publication inferred from the content of the document
Scale found from the minute of meridian [= 0'99 cm]. Coordinates referred to the meridian of San Fernando (E 126°55'00''-E 127°42'00''/N 6°13'30''-N 5°39'15'').

Geographical web from 15'to 15'
Relief by normal and bounded points. Bathymetric probes and depth contours
It marks anchorages, shoals, villages and the most important military outposts
Alphabetic code to determine the quality of the seabed
In bottom margin, under the title "Tomada de la Carta publicada por la Dirección de Hidrografía en 1877"

Title:	Archipelagos of Joló and Tawi-Tawi / Copy of the Archive of the War Deposit [Map]
Physical description:	1 map. : col. ; 46 x 68 cm
Notes:	Date taken from the "Catálogo de mapas. Filipinos" of SGE, 1975 Scale found from 1º latitude [= 16'2 cm]. Coordinates referred to a non-specified meridian (E 125° 0' -- E 128° 35' / N 7° 00' -- N 4° 30'). Geographical web from 30’ to 30’ Shaded orography The coasts washed in blue The dry seal of the "Cuerpo de Estado Mayor. Depósito de la Guerra" appears in the bottom margin

Title:	Archipelago of Joló : Expedition to Jolo 1876 [Map]
Physical description:	1 map. : ms., col., materials for planes ; 42'3 x 59'8 cm
Notes:	Scale found from one degree of meridian [= 11'7 cm]. Coordinates referred to the meridians of San Fernando (E 124°27'--E 128°37'/N 6°57'-N 4°00') and Manila (O 2°48'--E 1°26'). Geographical web from 1º to 1º Shaded relief Delineated in blue, red and black ink

4. Luzón (West)

Title: Tambales coast in the western part of the island of Luzon/Delineated by Diego Velázquez. It is a copy. Aragn.(map)

Edition: 19 December 1822

Physical description: 1 nautical chart: ms.; 44.8 x 56.1 cm

Notes: It includes Scarborough Bank. Signed and initialed by the authors. Scale found from 1º latitude (=19’0 cm). Coordinates referred to the meridian of Manila (W 3º 35’-W 0º50’/N 16º 30’-N 14º 30’). Geographical inset. Relief by normal points. Date of the original: “year of 1818”. It indicates bathymetric probes, reefs and anchorages. Hydrographic code to determine the quality of the seabed. Coastal toponomy of the main geographical features. On the right margin: "Atlas nº 1 1ª Parte". Seal of the Engineers Command of Philippines.

5. Samples of materials used by Coello to make the map of the Philippines in the 19th century in which the Spratly are included. This map was produced to support Spanish interests.

Title:	Spherical chart of the Archipelago of Jolo and a part of the island of Borney / Hydrographical Direction: J. Galván engraved it, P. Bacot engraved the letter
Edition:	Ed. 2nd. 1881 cor.
Publishers:	Madrid : Dirección de Hidrografía, 1883
Physical description:	1 nautical chart; 60 x 94 cm
Collection:	Archipiélago Filipino
Notes:	Scale calculated from 1º latitude[= 17'4 cm]. Coordinates referred to the meridians of San Fernando (E 124°20'--E 128°37' / N 6°57'--N 3°40') and Manila (O 3°49'--E 1° 27'). Geographical web from 1º to 1º Relief represented through normal and bounded points It indicates bathymetric probes, depth contours, anchorages, stream direction and quality of the seabed Explanatory notes on the probes and the magnetic declination

Title:	Map of the rada of Culasian / executed in 1889 by the Navy Lieutenant D. M. Anton ; E. Pérez engraved it, S. Bregante y Mz. Engraved the letter
Publishers:	Madrid : Depósito Hidrográfico, 1890
Physical description:	1 nautical chart ; 47 x 30 cm
Collection:	Archipiélago Filipino. Costa W. of Paragua
Notes:	Scale in fraction representative and graphic of 1000 m [= 9,9 cm] and half mile [= 9,2 cm]. Coordinates of the Sidang-dang hill referred to the meridian of San Fernando (E 123°40'15''/N 8°52'25'') Relief by normal points It indicates bathymetric probes, depth contours and shoals. Hydrographic code to denote the quality of the seabed A short note on the probes and the tides Dry seal of the Hydrographic Deposit

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Annex 239

Opinion of Craig H. Allen, Judson Falknor Professor of Law, University of Washington (19 Mar. 2014)

March 19, 2014

Re: *The Republic of the Philippines v. The People's Republic of China* (Annex VII Arbitration)

Opinion of Craig H. Allen, Judson Falknor Professor of Law, University of Washington

As a *pro bono* measure to restore and preserve the safety of life and property at sea in the western Pacific, I have agreed to examine the circumstances surrounding the April 28 and May 26, 2012 encounters between public vessels of the Peoples' Republic of China (PRC) and the Republic of the Philippines (RP), with a view toward assessing the vessels' compliance with the 1972 Convention on the Prevention of Collisions (COLREGS) and other applicable international law. If called before the tribunal, I am prepared to provide the following testimony.

I. My Background and Qualifications

I am the Judson Falknor Professor of Law and an Adjunct Professor of Marine Affairs at the University of Washington in Seattle, where I teach, among other things, Admiralty and Maritime Law, International Law of the Sea and Ocean and Coastal Law. I assumed my faculty position shortly after retiring from the U.S. Coast Guard in 1994. During my Coast Guard career I served on four patrol cutters and as a marine casualty investigator and attorney. In the course of my career I received extensive formal training in navigation, seamanship, rules of the road and shiphandling from the U.S. Navy, Coast Guard and Maritime Administration. In 1988 I obtained a U.S. merchant mariner's license as a master of oceangoing vessels (1,600 tons).

During my seagoing tours with the Coast Guard I gained considerable experience sailing in restricted waters and in close proximity to other vessels. As a rated quartermaster, deck officer, operations officer, navigator, executive officer and commanding officer on Coast Guard cutters, I have performed, executed and/or supervised more than 1,000 collision avoidance maneuvers. As a marine investigator I conducted over 100 investigations into vessel casualties and oil spills, determined their causes, recommended remedial action and presented cases before administrative law judges (for purposes of suspending or revoking licenses or documents held by professional mariners). I have also served as Coast Guard liaison to, and counsel before, panels of the U.S. National Transportation Safety Board.

I am the author of *Farwell's Rules of the Nautical Road* (Naval Institute Press, 8^{th} ed., 2004), the leading book on rules of the road in the United States, *International Law for Seagoing Officers* (Naval Institute Press, 6^{th} ed., 2014), as well as numerous articles on marine law and operations issues. From 2005-2011 I served on the U.S. Navigation Safety Advisory Council and chaired its Rules of the Road Working Group. I am a Fellow in the Royal Institute of Navigation and the Nautical Institute and serve on the editorial board of the *Journal of Navigation* and on *Ocean Development and International Law*. For the 2006-2007 academic year I held the Charles H. Stockton Chair in International Law at the U.S. Naval War College in Newport, RI, and for the 2011-2012 academic year I served as a visiting professor at Yale Law School and the Distinguished Professor of Maritime Studies at the U.S. Coast Guard Academy. I have lectured on maritime subjects in Europe, South America and Asia and at the Maritime Institute of Technology and Graduate Studies and the International Maritime Law Institute. I have also served as an advisor to the U.S. delegation to the International Maritime Organization's Legal Committee and presently serve as an elected member of the Nautical Institute's IMO Liaison Committee.

II. Bases for Opinion

To prepare myself to provide an opinion on the questions posed I reviewed the reports provided to me by counsel for the Republic of the Philippines that described encounters between PRC government vessels and RP vessels in April and May of 2012. More specifically, I studied the information contained in the Report of the Commanding Officer of SARV-003 dated 28 April 2012 and the associated *note verbale* by the RP government to the PRC government, which document the April 28 vessel encounters at Bajo de Masinloc lagoon (Scarborough Shoal) involving PRC Fisheries Law Enforcement Command (FLEC) vessel FLEC-310 and RP Search and Rescue Vessels (SARV) SARV-002 and SARV-003. Additionally, I studied the May 26 vessel encounters described in the message from the RP Monitoring, Control and Surveillance (MCS) vessel MCS-3008 ("outgoing dispatch" dated May 27, 2012) involving that RP vessel and PRC Maritime Surveillance Vessel 71 (MSV-71),[1] FLEC-303 and FLEC-306, while MCS-3008 was en route to Scarborough Shoal. Finally, I noted that the PRC Response to the Republic of the Philippines *note verbale* of April 30, 2012 (Embassy of the PRC No. (12) PG-239 dated May 25, 2012) does not deny the incidents occurred, but rather defends any actions taken by its vessels as an exercise of PRC sovereignty over the waters.

III. Opinion

Summary of opinion: in my opinion, PRC vessel FLEC-310 violated the COLREGS on April 28, 2012, when it passed within 200 yards of SARV-002 and 600 yards of SARV-003 at speeds in excess of 20 knots. In addition, PRC public vessels MSV-71, FLEC-303 and FLEC-306 violated the COLREGS on May 26, 2012, when they attempted, on multiple occasions, to cross the bow of RP vessel MSC-3008 at a distance of as little as 100 yards and speeds of up to 20 knots.

The following sets out the legal bases for my opinion and my analysis.

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[1] MSV-71 is sometimes referred to in the reports as "CMS-71" (Chinese Maritime Surveillance vessel-71).

A. The Flag State's Obligation under UNCLOS

The ASEAN *Declaration of Conduct of Parties in the South China Sea* highlights the central role of the U.N. Convention on the Law of the Sea (UNCLOS) in the peaceful resolution of disputes among the ASEAN member-states and the PRC. UNCLOS article 94.4(c) requires all states to take such measures as are necessary to ensure that the masters, officers and crews of vessels flying their flag are fully conversant with and required to observe the applicable international regulations concerning the prevention of collision. The regulations referred to are the 1972 International Regulations for Preventing Collisions at Sea (COLREGS).

A principal goal of both UNCLOS and the family of related conventions developed under the auspices of the International Maritime Organization is the safety of life and property at sea. *See, e.g.*, UNCLOS arts. 21(a), 22, 39.2, 41.1, 42.1(a) and 94. Because vessel collisions and strandings often result in oil discharges, safety of navigation is also inextricably linked to protection of the marine environment, and conduct by one state that creates a risk of collision not only threatens life and property, it also necessarily creates a risk of a potentially serious marine pollution incident.

UNCLOS imposes a duty on flag states to ensure their vessels operating at sea do so with due regard for the rights and interests of other states. *See* UNCLOS art. 87.2. UNCLOS articles 88 and 301 essentially repeat the command of article 2.4 of the U.N. Charter (and echoes the ASEAN *Declaration of Conduct*), which prohibits the use of force or the threat to use force against another state—a principle broad enough to include the threat or attempt by a state's public vessels to intentionally collide with a foreign vessel. Indeed, one United States court of appeals recently condemned the intentional ramming of another vessel as an act of piracy and a violation of article 3 of the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation. *See Institute of Cetacean Research v. Sea Shepherd Conservation Society*, 708 F.3d 1099 (9th Cir. 2013). Similarly, the International Maritime Organization recently condemned any actions that intentionally imperil human life, the marine environment or property during confrontations on the high seas. IMO, Resolution MSC.303(87), May 17, 2010.

B. The Duty of All Vessels to Comply with the COLREGS

The COLREGS apply to vessels on the high seas and all waters connected therewith navigable by seagoing vessels. *See* COLREGS Rule 1(a). Thus, all of the incidents discussed in this opinion occurred in waters to which the COLREGS apply.

Although government-owned or government–operated vessels engaged only in non-commercial service are immune from the jurisdiction of other states (UNCLOS arts. 96 & 32), they are nevertheless required to observe the COLREGS. That duty is made clear by COLREGS Rule 1, which extends to "*all* vessels upon the high seas and in all waters connected therewith navigable by seagoing vessels" (emphasis added). Although the COLREGS do include some distinctions between public and non-public vessels (e.g., COLREGS Rule 1(c)), and provide for limited accommodations for such vessels when engaged in such activities as mine clearance, aircraft launch and recovery, and underway replenishment operations (Rule 3(g)), it is clear that public vessels like the PRC vessels involved in these incidents are required to comply with the COLREGS. Any breach of that duty that harms another state gives rise to international responsibility. *See, e.g.*, International Law Commission, Articles on Responsibility of States for Internationally Wrongful Acts, art. 2.

C. Analysis

The April 28 and May 26, 2012 encounters occurred between vessels that were in sight of one another. Accordingly, the COLREGS Steering and Sailing Rules in Section B.1 (rules for vessels in any condition of visibility) and Section B.2 (rules for vessels in sight of one another, including Rules 11-18), as well as the general responsibility provisions of Rule 2, applied to the involved vessels. It should be added that the courts have admonished that, in construing and applying the rules of the road, it is the very *risk* of collision that must be avoided, not just the collision itself. *See, e.g., Esso Standard Oil Co. v. The Tug Maluco*, 332 F.2d 211, 214 (4th Cir. 1964) (emphasis added). Thus, the fact that a collision was ultimately avoided by *in extremis* emergency maneuvers by the innocent vessel in no way excuses a violation of the rules. *See* COLREGS Rule 17(d) (actions by the stand-on vessel, and explaining that "this Rule does not relieve the give-way vessel of her obligation to keep out of the way").

Applying the COLREGS rules to the reports referred to above, I have concluded that in the April-May 2012 incidents the PRC vessels violated the following COLREGS rules (the violations are summarized in Table 1 at the end of this opinion letter):

- Rule 2(a) (the "Good Seamanship" rule): the conduct of PRC vessels FLEC-310 on April 28 and MSV-71, FLEC-303 and FLEC-306 on May 26, 2012, demonstrated serious and apparently intentional breaches of the Rule 2(a) requirement for all vessels to take such precautions as are required by the ordinary practice of seamen. To the contrary, intentionally endangering another vessel through high speed "blocking" or harassment maneuvers constitutes a flagrant disregard of the tenets of good seamanship.

- Rule 6 failure to proceed at all times at a safe speed: the April 28, 2012 incident in which FLEC-310 proceeded at a speed in excess of 20 knots within 200 yards of RP vessel SARV-002 and 600 yards of SARV-003, and the May 26, 2012 conduct by MSV-71, FLEC-303 and FLEC-306 when they attempted to cut across the bow of RP vessel MCS-3008 at a distance of as little as 100 yards and at speeds of up to 20 knots demonstrate clear violations of Rule 6. Such high speed close-aboard maneuvers by the much larger PRC vessels created a dangerous 2 meter high wake for the nearby RP vessels and their small boats alongside and left little or no margin for error by either vessel, vastly increasing the risk of collision.

- Rule 8 action to avoid collision: COLREGS Rule 8 imposes a number of obligations on vessels when risk of collision exists. For example, paragraph 8(d) of the rule requires that "action taken to avoid collision with another vessel shall be such as to result in passing at a *safe distance*" (emphasis added). It can be seen that it is not merely a duty to avoid collision; it is a duty to maneuver to leave a safe distance between the two vessels at their closest point of approach. The COLREGS do not define what a "safe distance" is. Mariners recognize that the determination is context specific. They also recognize that to be "safe" the passing distance must be large enough to leave a margin for error and allow for the unexpected, like a mechanical malfunction on one of the vessels. Passing at a distance that does not provide that margin for human error or mechanical malfunction violates Rule 8. Vessels traveling at relatively high speeds (really any speed above 10-12 knots) require a wider margin than vessels traveling at lower speeds. The angle of approach between the two vessels is also relevant. For example, passing astern of another vessel at a distance of 1,000 yards might be deemed safe, while that same distance would almost certainly be deemed unsafe in an attempt to cross ahead of the vessel. A temporary loss of steering or propulsion or a momentary distraction under such circumstances could quickly lead to collision.

  On April 28, 2012, FLEC-310 failed to take positive action to avoid collision "in ample time and with due regard to the observance of good seamanship," to avoid a "close quarters situation," and to pass at a "safe distance" when it intentionally closed at high speed to within 600 yards of SARV-003 at 0900H and 200 yards of RP vessel SARV-002 at 0915H. PRC vessels MSV-71, FLEC-303 and FLEC-306 similarly violated Rule 8 by failing to take timely and positive action to pass RP vessel MCS-3008 at a "safe distance" on May 26, 2012.

- Rule 15: PRC vessel MSV-71 violated Rule 15 when it attempted to cut across the bow of RP vessel MCS-3008 at a distance of approximately 100 yards and a speed of more than 20 knots. Because MSV-71 was approaching MCS-3008 from MCS-3008's port side, MSV-71 was the "give-way" vessel in a crossing situation. Accordingly, Rule 15 required the PRC vessel to avoid, if the circumstances of the case admit, crossing ahead of MCS-3008.

- Rule 16: by intentionally closing on the RP vessels in attempt to block the RP vessels' progress, the PRC vessels created a dangerous situation that required them to assume the role of the give-way vessel in the approach situations. As such, on April 28 PRC vessel FLEC-310 violated Rule 16's requirement to "so far as possible, take early and substantial action to *keep well clear*" (emphasis added). I should add that the missions assigned to the U.S. Coast Guard cutters on which I served often required the cutter to "approach" vessels to identify them and determine their flag and the nature of their activities and, if the circumstances warranted, to intercept the vessel in order to carry out law enforcement boardings. I am therefore familiar with the occasional tension between the rules of the road codified in the COLREGS and the operational requirements of a public vessel engaged in constabulary operations. It was clear to us in the U.S. Coast Guard that, in carrying out our constabulary missions, the mission did not excuse us from compliance with the COLREGS. That command is made clear by COLREGS Rule 2(b), which permits a departure from the rules only when necessary to "avoid immediate danger." Courts of the United States strictly construe this so-called "special circumstances" rule. *See Crowley Marine Services Inc. v. Maritrans Operating Company LP*, 530 F.3d 1169 (9th Cir. 2006) (limiting departures from the rules under Rule 2(b) to situations involving "an immediate danger, perfectly clear; and the departure from the Rules must be no more than is necessary"); *see also* A.N. Cockcroft & J.N.F. Lameijer, *A Guide to the Collision Avoidance Rules* (6th ed. 2004) at 8 (the special circumstances rule "does not give any vessel the right to take action contrary to the Regulations whenever it is considered to be advantageous to do so"). Thus, any argument that government-owned or government-operated vessels can simply ignore the rules with impunity when engaged in constabulary operations finds no support in the text of UNCLOS, the COLREGS or decisional law.

IV. Conclusion

I am often asked to assess whether vessel operators acted *negligently* by failing to adhere to the COLREGS. The April and May 2012 incidents I was asked to review in this case were fundamentally different from those I typically review and comment on, in that the incidents described in these reports apparently involved *intentional* violations of the most basic rules for preventing collisions at sea, such as proceeding at a safe speed and maneuvering to stay well clear of other vessels. Nowhere was that more evident than in the deliberate attempt by PRC vessel FLEC-306 to back into RP vessel MCS-3008 when the latter maneuvered to enter the Scarborough Shoal lagoon on May 26, 2012. The acts by the PRC government vessels endangered the lives of all of the mariners involved, the vessels and the marine environment, and would be condemned by all professional mariners.

One particularly alarming aspect of the reported incidents is that the PRC vessels appear to have grown more reckless in their violations with each new incident. For example, on April 26, 2012, FLEC-310 passed uncomfortably close to an RP patrol vessel, but by passing astern it reduced the risk of miscalculation. By contrast, on April 28 and May 26 the PRC vessels attempted to pass immediately ahead of the RP vessels—a far more dangerous act of brinkmanship that left little or no margin for error.

Craig H. Allen
Judson Falknor Professor of Law

TABLE 1: COLREGS VIOLATIONS BY PRC VESSELS

Date/Time	RP Vessel	PRC Vessel	PRC Vessel COLREGS Violations
28 April/0900H	SARV-003	FLEC-310	Rules 2(a), 6, 8, 16 (600 yd. CPA)
28 April/0915H	SARV-002	FLEC-310	Rules 2(a), 6, 8, 16 (200 yd. CPA)
26 May/1550H	MCS-3008	MSV-71	Rules 2(a), 6, 8, 15, 16 (attempt to cross bow, to block RP vessel)
26 May/~1700H	MCS-3008	FLEC-303	Rules 2(a), 6, 8, 15, 16 (three attempts to cross bow, to block RP vessel)
26 May/1715H+	MCS-3008	FLEC-306	Rules 2(a), 8, 16 (FLEC-306 backed full to within 10 meters of MCS-3008, to block her)

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Current Position: Judson Falknor Professor of Law, University of Washington
Adjunct Professor of Marine & Environmental Affairs

Education: LL.M., International Maritime Law Institute, Malta

J.D. *with highest honors*, University of Washington
Law School Honors:
Class Honor Graduate
Order of the Coif, National Order of Barristers
Law School Activities:
Editor in Chief, *Washington Law Review*
Vice President for Advocacy, Moot Court Honor Board

B.S., Portland State University

Professional Licenses/Associations:

Admitted to Practice: All state and federal bars in Oregon and Washington,
Court of International Trade, Ninth and Federal Circuits, Court of Appeals for the Armed Forces and U.S. Supreme Court
Board of Editors, *Ocean Development and International Law*
Board of Editors, *Journal of Navigation*
Licensed Master, Oceangoing Vessels (NMT 1600 GRT) (presently inactive)
Fellow, The Nautical Institute, Member, IMO Liaison Committee
Fellow, The Royal Institute of Navigation

Bar/Professional Leadership Positions:

Washington State Bar Association (member in good standing since 1994)
Oregon State Bar (elected House of Delegates 1996-2000)(now in inactive status)
U.S. Maritime Law Association (Academic member, 1996-present)
Chair, Maritime Law Section, American Association of Law Schools (2002)
Section Vice Chair (2001), Secretary (2000), Treasurer (1999)
Dep't of Homeland Security, Navigation Safety Advisory Council (2006-11)
Chair, Rules of the Road working group (2007-09)
Nautical Institute, elected Governing Council member (2006-09)

Other Teaching Appointments:

Yale Law School, New Haven, CT, Visiting Professor of Law (2011-12 academic year)

U.S. Coast Guard Academy, New London, CT (2011-12 academic year)
Distinguished Visiting Professor of Maritime Studies

U.S. Naval War College, Newport, RI (2006-07 academic year)
RADM Charles H. Stockton Chair in International Law

University of Oregon, Visiting Professor of Law, (2002-03 academic year)

Subjects Taught:

University of Washington: Admiralty and Maritime Law, International Law of the Sea, U.S. Ocean and Coastal Law, Law of the Marine Environment, Marine Law and Policy Seminar, Evidence, Torts, Civil Procedure I & II, Constitutional Law, Public International Law, International Criminal Law, National Security Law, Foreign Affairs and the Constitution, International Litigation and Arbitration. U.S. Coast Guard Academy: Maritime History and Policy; Maritime Strategy Challenges and Opportunities. U.S. Naval War College: Joint Military Operations, International Law of Military Operations, Operational and International Law Issues for Military Commanders.

Faculty Awards:

USCG, Commander's Award for Civilian Service (U.S. Coast Guard Academy) (2012)
Philip Trautman Professor of the Year Award, UW School of Law (2010)
Distinguished Alumni Award, 2006, *Washington Law Review*
Professor of the Year Award, UW School of Law (2002)
Professor of the Year Award, UW School of Law (1998)

Other Law School/University Activities:

Director, UW Arctic Law & Policy Institute (2013-present)
Director, UW Law and Marine Affairs Graduate Program (1996-2001)
Committee on Graduate Studies in Global Trade, Transportation & Logistics (1996-2010)

Grants/Projects:

Principal Investigator, National Oceanic & Atmospheric Administration Grant for "Safe Marine Transportation Forum" (1997-1998); Member of Forum (1995-1998)

Selected Pro Bono Litigation Support Projects

Member, IMO Liaison Committee, Nautical Institute (2009-present): the elected committee screens IMO Assembly, Council and committee agendas and working papers to prepare Nautical Institute responses (as an official NGO observer). Committee members generally divide the work by subject matter. I screen all COLREGS, e-Nav, SOLAS ch. V and ISM Code, STCW, Salvage and SAR Convention materials, as well as cross-cutting issues like Piracy, Refugees and the developing mandatory Polar Code.

“Track II” Diplomacy Panel mediating East China Sea/South China Sea maritime disputes with governments of Vietnam, China and Japan (2011-ongoing)

Invited Expert, Unmanned Maritime Systems Workshop, U.S. Naval War College, Newport, RI

Served as expert witness (pro bono) for U.S. Coast Guard/Department of Justice in criminal prosecutions arising out of M/V *Cosco Busan* allision with Bay Bridge (2008-09)

Assisted (pro bono) Petitioner’s Supreme Court counsel (Jeff Fisher, Director of Stanford Law School’s Supreme Court Litigation Clinic) with appeals to U.S. Supreme Court in Lozman v. City of Riviera Beach (2012-13) and Exxon v. Baker (2007-08)

Served as expert consultant (pro bono) for counsel defending Hong Kong pilot against negligent homicide arising out of collision in Hong Kong harbor (2013)

Public-Private Sector Working Group on obtaining accession to the UN Law of the Sea Convention, May 2007-09

Assisted Coast Guard legal team in developing theories for extradition of Russian crewmembers of T/V *Virgo* following fatal collision with F/V *Starbound* in 2001 in U.S. EEZ

Strategy, Planning & Policy Development and Review Working Groups:

Global Maritime Information Sharing: Removing Inhibitors to Efficient Maritime Commerce through Enhanced Information Sharing, U.S. Merchant Marine Academy, August 19-21, 2008 (convened by U.S. Office of Global Maritime Situational Awareness, Department of Justice, Coast Guard and Navy Fleet Forces Command)

U.S. Naval War College and U.S. Naval Academy, Maritime Strategy Development Working Group, September 2006-March 2007 (produced *Cooperative Strategy for 21st Century Seapower*)

International Experts’ Seminar: *Toward a New Governance of High Seas Biodiversity*, Musée Océanographique, Monaco, March 20-21, 2008

Chair, Legal Experts’ Workshop on Future of the Global Legal Order, U.S. Naval War College, Newport, RI, Oct. 31- Nov. 1, 2006, final report published in 60 *Naval War College Rev*. 73 (2007)

Reviewer, U.S. Commission on Ocean Policy, Final Draft of *An Ocean Blueprint for the 21st Century* (ch. 17 on Marine Operations and ch. 18 on Non-indigenous Marine Species), 2003

Private Sector Advisor to U.S. Delegation, International Maritime Organization Legal Committee meetings, 2001-2003

Academic Participant, *UNCITRAL/CMI Marine Transport Law Working Group*, United Nations, New York, NY, July, 2000

Employment Experience:

1996-present	University of Washington, Seattle, WA Judson Falknor Professor of Law Adjunct Professor of Marine and Environmental Affairs
2011-12AY	U.S. Coast Guard Academy, New London, CT Distinguished Visiting Professor of Maritime Studies
2011-12AY	Yale Law School, New Haven, CT Visiting Professor of Law
2006-07	U.S. Naval War College, Newport, RI. RADM Charles H. Stockton Chair in International Law As a visiting professor and Stockton Chair holder, provided instruction in the senior level (0-6/0-5), junior level (O-4), and foreign officer courses in Joint Military Operations (international law, law of armed conflict, rules of engagement, maritime security operations, maritime law enforcement); Law of Military Operations and Operational and International Law Issues for Military Commanders. Conducted and published research. Provided legal advice to various cells during war games. Assisted in preparation of new edition of *Commander's Handbook on the Law of Naval Operations* (NWP 1-14M). Organized and executed "future of the global legal order" workshop, drawing on legal experts from Joint, COCOM, service, interagency and United Nations Legal Affairs staffs, 10 representative nations and NGOs. Served as legal adviser to joint and interagency working group charged with drafting the USN/USMC/USCG Maritime Strategy. Served as panelist at maritime law conferences in the U.S., PACOM/S.E. Asia, Europe and SOUTHCOM/South America
1999-2001	Of Counsel, Garvey Schubert Barer, PLLC, Seattle, WA Provided advice on international, maritime and environmental compliance issues; "due diligence" investigations; trial and appellate litigation services to clients in U.S. and overseas; legal research for briefs and legal opinions; pretrial discovery and motion practice; settlement negotiations and trials. Prepared Supreme Court amicus brief on behalf of American Waterways Operators in Intertanko v. Locke (2000)
1996-99	Of Counsel, Bogle and Gates, PLLC, Seattle, WA Provided advice on international, maritime and environmental compliance and risk management issues (including white collar crime and ethics issues); trial and appellate litigation services for clients in U.S. and overseas; coordinated firm's oil spill response team efforts; frequent visits/consultations with P&I clubs; settlement negotiations and trials.
1975-1994	U.S. Coast Guard (retired with 21 years of military service)

Publications: **(SSRN Author No. 334079)**

A. Books

Craig H. Allen, INTERNATIONAL LAW FOR SEAGOING OFFICERS (Naval Institute Press, forthcoming May 2014)

Craig H. Allen, MARITIME COUNTERPROLIFERATION OPERATIONS AND THE RULE OF LAW (Greenwood-Praeger Publ., 2007)

Craig H. Allen, FARWELL'S RULES OF THE NAUTICAL ROAD (8^{th} edition, U.S. Naval Institute Press, 2004)

B. Book Chapters/Book Contributions

Cargoes of Doom: National and Multilateral Strategies to Combat the Illicit Transport of Weapons of Mass Destruction by Sea, in OCEANS IN THE NUCLEAR AGE 295-335 (Harry Scheiber & David D. Caron, eds.) (Nijoff Publ. 2010)

The Influence of Law on Sea Power Doctrines: The New Maritime Strategy and the Future Global Legal Order, in INTERNATIONAL LAW AND MILITARY OPERATIONS, 84 INT'L LAW STUDIES 1-31 (Michael D. Carsten, ed., 2008)

The International Supply Chain Security Regime and the Role of Competent International Organizations, in LEGAL CHALLENGES IN MARITIME SECURITY 165-254 (Brill Publ. Co., Myron Nordquist & Rudiger Wolfrum, eds., 2008)

Craig H. Allen, *Armed Groups and the Law*, in ARMED GROUPS 27-52 (Government Printing Office, Jeffrey Norwitz, ed., 2008)

Craig H. Allen, *'Command of the Commons' Boasts: An Invitation to Lawfare?*, in GLOBAL LEGAL CHALLENGES, 83 INT'L LAW STUDIES 1 (Michael D. Carsten, ed., 2007)

Craig H. Allen, *The USA PATRIOT Act of 2001*, ENCYCLOPEDIA OF AMERICAN CIVIL LIBERTIES (Paul Finkleman, ed., 2006)

Craig H. Allen, *Legal Interoperability Issues in International Cooperation Measures to Secure the Maritime Commons*, in ECONOMICS AND MARITIME STRATEGY: IMPLICATIONS FOR THE 21^{ST} CENTURY 113 (Richmond M. Lloyd, ed., 2006)

Craig H. Allen, *Limits on the Use of Force in Maritime Operations in Support of WMD Counter-Proliferation Initiatives*, in INTERNATIONAL LAW CHALLENGES: HOMELAND SECURITY AND COMBATING TERRORISM, 80 INT'L LAW STUDIES 77-139 (Thomas McK. Sparks eds., 2005)

C. Law Reviews/Journals

Future Ports Scenarios for 21st Century Seaport Strategic Planning, 79 J. TRANSP. L. LOGIST. & POL'Y 89-137 (2012)

Admiralty's In Extremis Doctrine: What Can be Learned from the Restatement (Third) of Torts Approach? 43 J. MAR. L. & COM. 155-193 (2012)

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Annex 240

Kent E. Carpenter, Ph.D., *Eastern South China Sea Environmental Disturbances and Irresponsible Fishing Practices and their Effects on Coral Reefs and Fisheries* (22 Mar. 2014)

Eastern South China Sea Environmental Disturbances and Irresponsible Fishing Practices and their Effects on Coral Reefs and Fisheries

Expert Report of Professor Kent. E. Carpenter, Ph.D.

22 March 2014

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I. Executive Summary

There is clear evidence that Chinese nationals are using destructive fishing methods at Scarborough Shoal and Second Thomas Shoal. This includes extraction of live corals and giant clams, and the use of cyanide and dynamite for fishing. These methods of exploitation destroy the coral reef ecosystem. There is also clear evidence that China's construction activities on Mischief Reef and McKennan Reef further contribute to the degradation of their coral reefs.

This degradation will decrease the capacity of the reef to support fish and fisheries. It will also affect ecosystem services that support biodiversity both on the immediate reef and in the wider South China Sea. Furthermore, these reefs of the eastern South China Sea also influence the biodiversity of the greater Philippine archipelago, particularly western Luzon, Palawan and the Sulu Sea, as they serve as a source of larvae and juveniles for these areas. Degradation of reef habitat through irresponsible fishing methods diminishes the capacity of this source of biodiversity replenishment.

Chinese nationals are also extracting endangered species. This includes endangered live corals, giant clams and marine turtles. The loss of this biodiversity degrades the functioning of ecosystems and decreases this region's capacity to support human livelihoods and produce food from fisheries.

II. About the Author

I am a Professor in Biological Sciences at Old Dominion University in Norfolk, Virginia, United States, where I have taught and carried out marine biological research since 1996. Since 2005, I have also served as Manager of the Marine Biodiversity Unit and Global Marine Species Assessment of the International Union for Conservation of Nature ("IUCN"). I did my undergraduate work at the Florida Institute of Technology in Melbourne, Florida, United States, where I graduated with high honors. I then spent three and a half years as a U.S. Peace Corps Volunteer in the Philippine Bureau of Fisheries and Aquatic Resources, Research Division, conducting research on the coral reefs of the Philippine archipelago. I received my Ph.D. in Zoological Sciences at the University of Hawaii in Honolulu, Hawaii, United States, through a fellowship with the East-West Center.

I then returned to the Philippines as a Post-doctoral Fellow and Research Associate for the Hawaii Institute of Marine Biology at the University of the Philippines in the Visayas. I subsequently held positions at the Kuwait Institute for Scientific Research as a marine biologist and as a Senior Fisheries Research Officer for marine biodiversity of the Food and Agriculture Organization of the United Nations in Rome, Italy.

I have received numerous awards for my work, including being selected as a Fulbright Senior Scholar, which enabled me to spend six months at Silliman University in Dumaguete, Philippines in 2011. My primary research interests are marine conservation biology, systematics and evolution of fishes, ecology of coral reefs, and marine biogeography and phylogeography. I have taught courses in Ichthyology, Marine Biology, Evolution, Systematics and Speciation and Marine Conservation Biology. I have authored 66 refereed scientific journal articles included in high impact journals such as *Science* and *Nature*. I have also authored nine full books and written 31 additional book chapters. My CV is attached to this expert report.

III. The Natural History and Environment of Scarborough Shoal and the Spratly Islands

A. Geology and Oceanography of the Area

The eastern South China Sea, which abuts the Philippine archipelago, is studded with numerous shallow maritime features, many of which are exposed or barely awash at low tides. Approximately 220 kilometers west of the Philippine island of Luzon, one encounters a single separate reef structure called Scarborough Shoal. Located in the southern part of the Sea, off the Philippine island of Palawan, the Spratly Islands are a cluster of hundreds of small features (McManus 1994, Morton & Blackmore 2001). Navigational charts refer to this as "Dangerous Ground" because the shallow reefs are difficult to detect and pose a considerable hazard to shipping. They stretch from about 75 kilometers west of Palawan, to the middle of the South China Sea, and over 600 kilometers from north to south.

The geological origins of the South China Sea and the reefs of the Spratly Islands and the Scarborough Shoal remain a subject of debate (Taylor & Hayes 1983, Hall & Sevastjanova 2012, Zahirovic et al. 2013). This is because the geology of Southeast Asia is extremely complicated, due to the convergence of more tectonic plates than anywhere else on Earth. A result of this convergence is the rise of seamounts, which are uplifts in the seabed whose peaks serve as an attachment site for coral growth (Hutchison & Vijayan 2010). The Spratly Islands and Scarborough Shoal were formed on top of these seamounts.

In order for a coral reef to grow, there must be sufficient penetration of light through the water to support photosynthesis. Reef growth occurs only if seamount peaks reach close to the surface. Because of the gradual fluctuation of sea levels over time, the growth of coral kept the reefs near the sea surface while erosion from wave action eroded the reefs to keep them shallow. Therefore, most coral reefs are low-tide elevations. Some coral reefs may turn into permanent sand cays as a result of the build-up of sand created from the erosion of coralline rock.

B. The Marine Life of the South China Sea

1. <u>The Species of the South China Sea</u>

It has long been known that the greatest concentration of marine life on the planet resides in the Southeast Asian region referred to as the Coral Triangle (Carpenter & Springer 2005). This area is defined largely by Indonesia, Malaysia, Brunei, the Philippines, Timor L'Este, Papua New Guinea, and the Solomon Islands (Figure 1). At the apex of the coral triangle, the central Philippines is well established as the one place in the world with more species of marine life per unit area than any other place on earth (Sanciangco et al. 2013; Figure 2). Since the Coral Triangle represents the global peak in marine biodiversity and the Philippines has the highest concentration of this biodiversity within the Coral Triangle, the Philippines has been referred to as the "Center of the Center" of marine biodiversity (Carpenter & Springer 2005). As the global epicenter of marine biodiversity, the waters near the Philippines represent one of its most valuable natural resources.

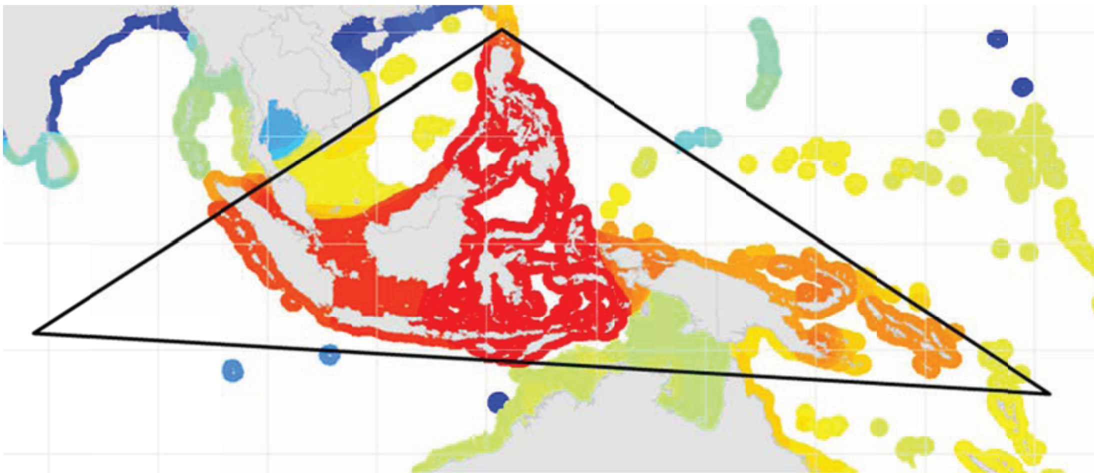

Fig. 1. Coral triangle as prescribed by number of species of corals (highest concentration in red).

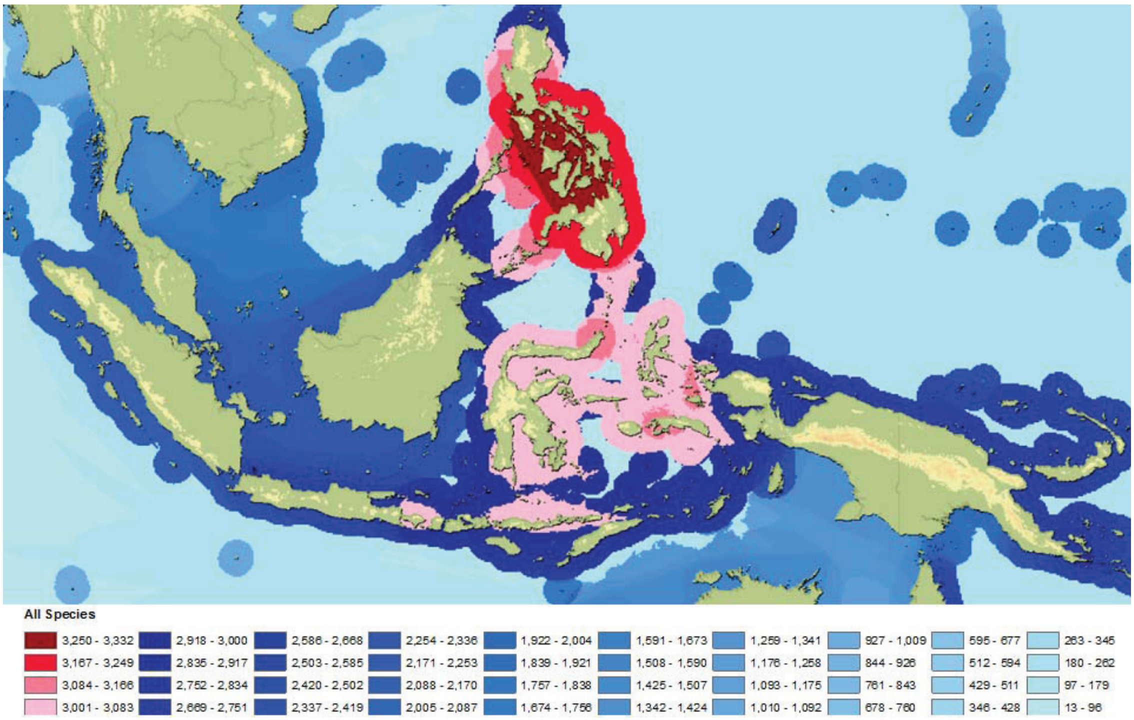

Fig. 2. Highest concentration of marine species (Sanciangco et al. 2013).
Numbers in caption are species counts.

Scarborough Shoal and the Spratly Islands have an extreme diversity of coastal fishes and a high percentage of the living representatives of seagrasses, corals, giant clams, marine turtles and many other marine groups. This area also harbors many marine mammals and sea birds. Many of the species that occur in this region are considered endangered according to the IUCN Red List of Threatened Species, including the Blue coral (*Heliopora coerulea*; Figure 3), the Giant clam (*Tridacna gigas*; Figure 4), and the Hawksbill turtle (*Eretmochelys imbricate*; Figure 5). All of these animals play important roles in the ecosystem. The Blue coral, like other corals, are reef builders whose growth determines the existence of the reef itself and whose complexity forms a habitat for other animals on the reef. The Giant clam is an important "filter feeder" that strains small plants and animals from the surrounding water

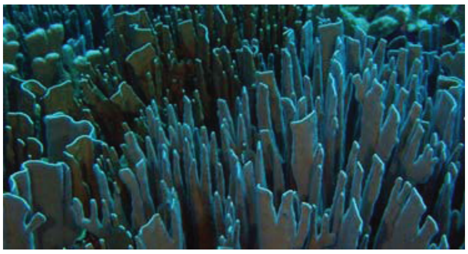

Fig.3. The Blue Coral (*Helipora coerulea*) considered Vulnerable to extinction according to the IUCN Red List of Threatened Species.

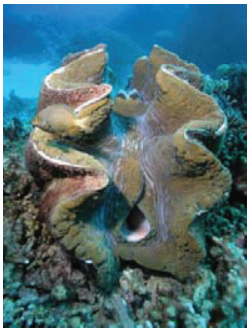


Fig. 4. The Giant Clam (*Tridacna gigas*) both on a coral reef and after extraction.

Fig. 5. The Hawksbill turtle (*Eretmochelys imbricate*) on a coral reef.

and turns it into biomass that contributes to the food web on the reef. Giant clams, like corals, also convert the calcium in the surrounding water to the hard structures that make up their skeleton. As is the case with many corals, these species are targeted for extraction from reefs by fishermen to be sold primarily as curios in tropical tourist areas. Their loss on the reef results in a reduction in the structure of the reef and reduces the ability of the reef to support life.

Other species present in the region include species that are highly sought after in the live reef fish food trade in China. This includes the relatively abundant Peacock grouper (*Cephalopholis argus*; Figure 6) which is not considered at imminent risk of extinction globally but whose numbers can be dramatically reduced on coral reefs by overfishing (Sadovy et al. 2012).

Figure 6. The Peacock grouper.

Other species at risk of extinction that are also present on these reefs that command very high prices in the live reef fish food trade in China (Sadovy et al. 2003) include the Endangered (IUCN 2014) Napoleon wrasse (Sadovy et al. 2003; *Cheilinus undulates*; Figure 7) and the Vulnerable to extinction Pantherfish (*Cromileptes altivelis*; Figure 8).

These fishes all feed on small animals that live on the bottom, including sea urchins and hard shellfishes that many other fishes are not capable of eating. Hence, they are an important link in the food chain to connect lower levels in the ecosystem to higher levels.

Figure 7. The giant Napoleon Wrasse (*Cheilinus undulates*).

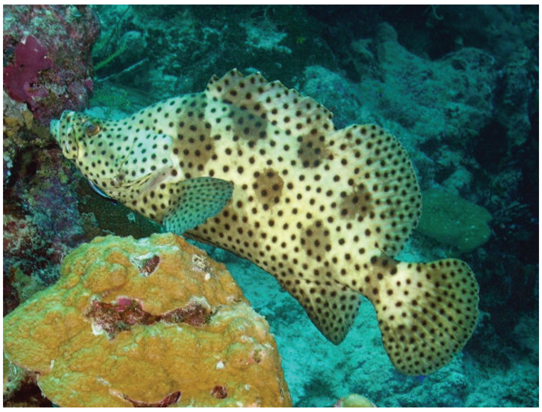

Figure 8. The Pantherfish (*Cromileptes altivelis*).

Another important reef fish that is easily overfished and is considered Vulnerable to extinction is the Bumphead parrotfish (*Bolbometopon muricatum*; Figure 9). This species plays a crucial role in the coral reef ecosystem; it is one of the few animals that feeds directly on live coral and converts this into sandy sediment that is deposited back on the reef. This conversion of corals to soft sediment is a natural means to provide habitat to those animals that specialize in living in sand and therefore enhances the diversity of animals on the reef.

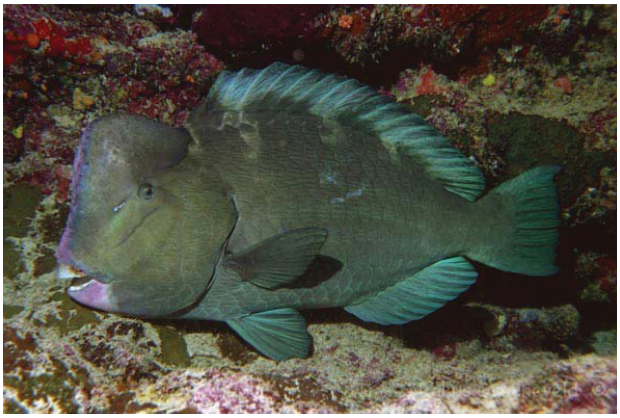

Figure 9. The Bumphead parrotfish (*Bolbometopon muricatum*).

2. <u>The Interconnectivity of the Different Ecosystems of the South China Sea</u>

The ocean currents in the South China Sea and the distinct life-cycles of marine species there create a high degree of interconnectivity between the different ecosystems in the South China Sea. The species present in the coral reef ecosystems, like the majority of marine plants and animals, float with the currents either as adults or as larvae. The surface ocean currents in the eastern South China Sea are dominated by the changing monsoon winds and the constant inflow of Pacific Ocean water from the east (Figures 10 and 11; Morton & Blackmore 2001, Liu et al. 2008, Han et al. 2009, Gordon et al. 2012). Pacific Ocean water is pushed into the northern South China Sea by the northern equatorial current, which flows

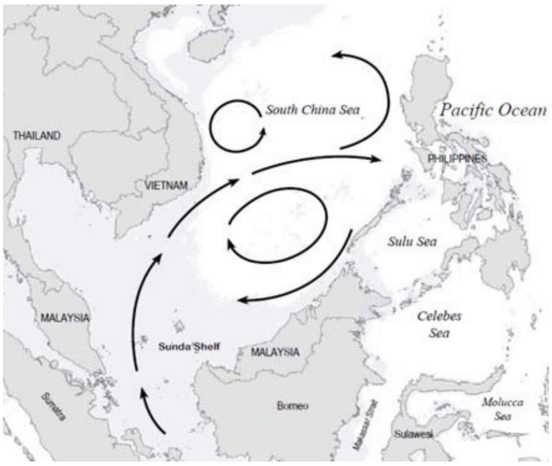

Fig. 10. Summer SCS currents

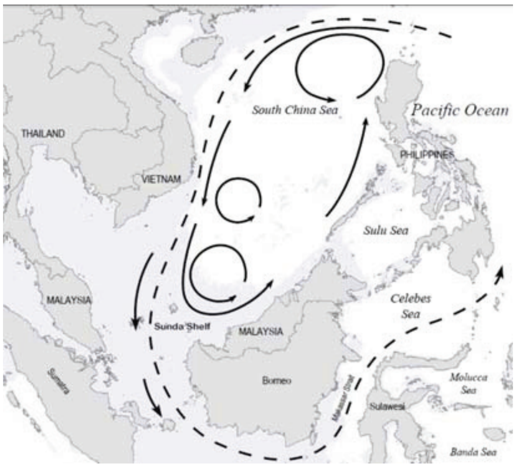

Fig. 11. Winter SCS currents

from east to west across the entire Pacific Ocean and pushes into the South China Sea between northern Luzon and the island of Taiwan. There is a net flow of surface water from the Pacific Ocean, through the South China Sea and the Philippines and into Indonesian waters and ultimately into the Indian Ocean. This net flow results in a connection of marine life from the Spratly Islands and Scarborough Shoal toward the inner seas of the Philippine Archipelago.

The Spratly Islands and Scarborough Shoal serve as an "upstream" source of larvae, *i.e.*, a means to replenish fisheries and reef life throughout the South China Sea and most importantly, to the Philippines. Environmental harm occurring in these areas effects the health and viability of ecosystems connected to the upstream sources by ocean currents. Scientific studies show that larvae originating in the Spratly Islands will spread through the central South China Sea; many will end up around the western shores of Luzon and penetrate into the inner seas of the Philippine Archipelago through the straits north and south of Palawan (Figure 12; Kool et al. 2011).

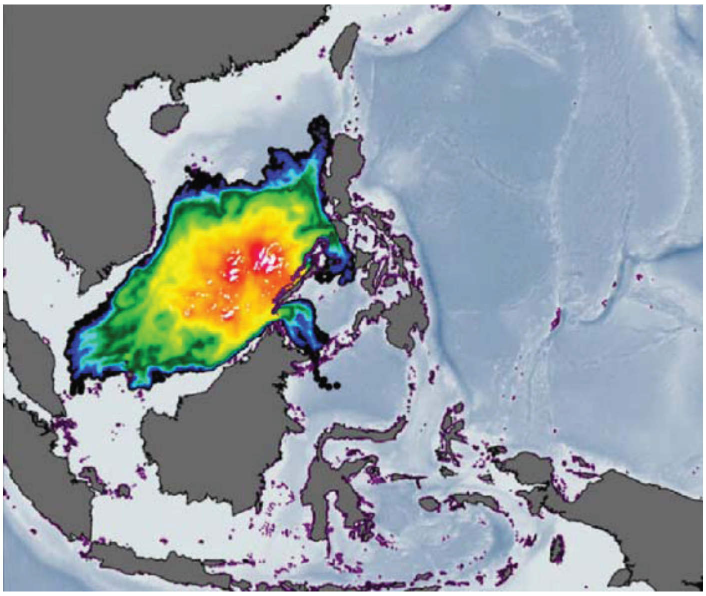

Fig. 12. Larval dispersal from Spratly Islands (white areas) when first released (red areas) to longest duration of pelagic period (yellow to green to blue and black areas). Larvae released around the Spratly's will potentially end up in the Sulu Sea through straits around northern (a) and southern Palawan (b). From Kool et al. 2012

The consequence of this connectivity between the Spratly Islands and Scarborough Shoal, on one hand, and the greater Philippine archipelago on the other, is that any environmental damage occurring on the reefs of the eastern South China Sea that diminishes parent populations of fishes, corals and other marine animals and plants, will influence the number of recruits of these animals to the greater Philippine archipelago. This could damage both the sustainability of fisheries and the ability of coral reefs and other marine communities to recover from disturbance (resilience) within the greater Philippine archipelago.

IV. Interpretation of Evidence Presented of Environmental Harm at Scarborough Shoal, Second Thomas Shoal, Mischief Reef and McKennan Reef

A. Irresponsible Fishing Activities of Chinese Nationals

1. Extraction of Vulnerable and Endangered Species from Scarborough Shoal and Second Thomas Shoal

I have reviewed evidence, in the form of reports produced by Philippine government institutions and videos, provided to me by the Republic of the Philippines that indicates that Chinese nationals have engaged in the extraction of vulnerable and endangered species from Scarborough Shoal and Second Thomas Shoal intermittently between January 1998 and May 2013.

Based upon this review, I am able to conclude that among the species collected from Scarborough Shoal were corals, giant clams, marine turtles, sharks and live reef fish (*e.g.*, the Peacock grouper (*Cephalopholis argus*; Figure 8). It is clear from photographic evidence that reef-building corals (Order Scleractinia) were collected whole for use as ornamental curios and perhaps also as construction material.

Amongst the corals I was able to identify on the basis of the photographic evidence included in the reports, it is clear that species of corals included the Blue Coral (*Heliopora coerulea*; Figure 5), which is considered Vulnerable to extinction by the IUCN, and the branching corals (*Pocilopora, Acropora*). Many of these coral species are considered threatened with extinction (Carpenter et al. 2008).[1]

I was also able to identify two species of giant clams extracted from the features by Chinese nationals. Both the Giant Clam (*Tridacna gigas*; Figure 6), the largest of all giant clams species and which is considered 'Vulnerable' to extinction by the IUCN, and the

[1] They are also protected under Appendix II of the Convention on International Trade of Endangered Species (CITES) conventions, to which China is a signatory. Furthermore, there has been a ban on the collection and export of corals in the Philippines since 1977 (Wood et al. 2012) that clearly indicates that the Philippine government considers that extraction of these species to be detrimental to their survival

Elongate Giant Clam (*Tridacna maxima*), which is listed as Near Threatened,[2] were identified. I am able to conclude that giant clams were among the species collected from both Scarborough Shoal and Second Thomas Shoal.

Marine turtles also were clearly extracted from Scarborough Shoal as evidence presented indicated both live specimens and recently expired carcasses. The photographic evidence was not always clear which species was collected. However, all the marine turtles likely to occur in the eastern South China Sea are considered either Critically Endangered (*Eretmochelys imbricata* or Hawksbill Turtle; Figure 7), Endangered (*Caretta caretta* or Loggerhead Turtle and *Chelonia mydas* or Green Turtle) or Vulnerable (*Lepidochelys olivacea* or Olive Ridley, and *Dermochelys coriacea* or Leatherback Turtle) to extinction according to the IUCN.[3]

Clear evidence of shark extractions from Scarborough Shoal was also presented. Sharks are important to the functioning of the ecosystem as top predators and many sharks are considered endangered (Dulvy et al. 2014). Although it was not clear from the evidence which species were being exploited, it is very clear that sharks are over-exploited in this region (Dulvy et al. 2014) and therefore unsustainably exploited in contravention of the FAO Code of Conduct of Responsible Fisheries (FAO 1995).

2. Use of Destructive Fishing Methods

I also reviewed evidence indicating Chinese nationals at Scarborough Shoal engaged in destructive fishing methods. Specifically, I reviewed evidence of confiscated cyanide and

[2] Both of these are protected under Appendix II of CITES.

[3] Additionally, all marine turtles are protected under various Conventions, national and international laws, treaties, agreements, and memoranda of understanding. These include all marine turtles under Appendix I of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora); some of the species under Appendices I and II of the Convention on Migratory Species (CMS); some of the species the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA); and all species under the Memorandum of Understanding on ASEAN Sea Turtle Conservation and Protection.

blast fishing materials and apparatuses, and live reef fish likely caught with cyanide fishing. This indicates that both blast or dynamite fishing and the use of poisons (cyanide) were used by Chinese nationals to extract fishes. Both dynamite and cyanide fishing are considered among the most highly destructive of all fishing methods (Fox & Caldwell 2006, Calado et al. 2014). These are specifically considered irresponsible and unsustainable according to the FAO Code of Conduct for Responsible Fisheries (1995).

B. Construction of Concrete Structures on Mischief Reef and McKennan Reef by China

I reviewed aerial photographs of the concrete structures built on Mischief Reef and McKennan Reef. Representative examples are reproduced below (Figures 13 and 14). These concrete structures appear to be placed in very shallow water that I judge to be less than 6 meters depth. Shallow coral reef area was obviously destroyed in the building of these sites. Furthermore, the discoloration of the water surrounding these structures indicates environmental impacts beyond the footprint of the building.

Fig. 13. Structures constructed on McKennan Reef

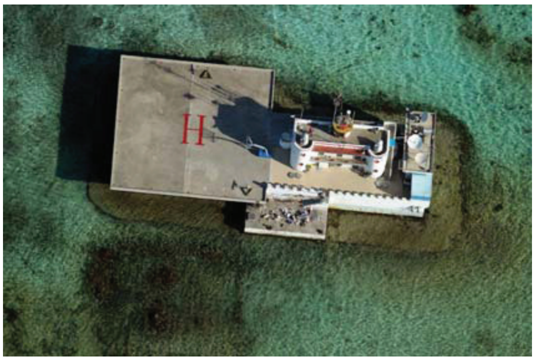

Fig. 14. Structures constructed on Mischief Reef

V. Effects on the Marine Environment of the South China Sea and the Greater Philippine Archipelago of the Activities by China and Chinese Nationals

A. Damage to the Coral Reefs of the South China

1. <u>The Importance of Healthy Coral Reef Ecosystem to the Overall Health of the Marine Environment of the South China Sea</u>

Coral reefs are the world's most valuable marine resources in terms of concentration of biodiversity and support for human livelihoods and well-being. A single coral reef in the Coral Triangle may have over 200 species of corals, over 300 species of fish, and thousands of species of invertebrate animals. Coral reefs can be thought of as the high-density cities of the seas. Consequently, they harbor rich fisheries resources. One square kilometer can provide protein needs for up to 2,500 people per year, but only if the reef is not degraded (Cesar 2000). Globally, coral reefs contribute US$375 billion in goods and services and provide up to one-fourth the total fish catch in developing countries (Cinner 2014). Realizing the potential worth of coral reefs depends on their health and preventing degradation is important to achieving this. Non-degraded reefs are also expected to have a better chance to survive the numerous potential threats from climate change (McClanahan et al. 2014).

2. Mechanisms of Harm

a. Coral Extraction

The reduction of coral cover and different types of coral growth forms on coral reefs, such as what has occurred as the result of the activities of Chinese fishermen on Scarborough Shoal, reduces the structural complexity of reefs and affects the ability of the reef to support fishes and other animals (Graham & Nash 2013). In addition, it disturbs the integrity of the reef and the ability of the reef to withstand and absorb wave action that can lead to further reduction in the reef.

Extraction of corals has a direct effect on the viability of animal species living at the coral reef. Extraction typically targets branching forms (as evidenced by the taking of branching forms by Chinese fishermen at Scarborough Shoal) that serve as refuges for small animals such as crabs, shrimps and fishes such as the numerous damselfishes that are typically very abundant on coral reefs of the South China Sea. These smaller forms are a food source for larger fishes and without corals to serve as habitat for the smaller animals, their number and variety are reduced. This in turn results in fewer larger fishes than can be supported on a reef.

The loss of the structural complexity by loss of corals on a reef reduces the variety, abundance and overall weight of fish on a coral reef. This ultimately reduces the amount of fish that can be sustainably harvested from coral reefs and therefore adversely affects fishermen who rely on reef fishing for livelihoods.

b. Giant Clam Extraction

The extraction of giant clams has direct effects on the integrity of the coral reef environment they inhabit and contributes to factors that can ultimately lead to permanent loss of valuable biodiversity (Wells 1997). Giant clams add considerable structure to coral reefs because of their size and hard, persistent shells. As such, their extraction has similar detrimental effects to the environment and the ability of the reef to support fishes and fisheries as described above for corals. In addition, their extraction typically entails the crushing and destruction of surrounding corals. This accompanies prying the clams loose from the reef substrate and in the damage that boats and divers do to the corals during this operation.

c. Use of Explosives and Cyanides in Extraction

The use of explosives and cyanides in coral and fish extraction negatively affects the coral reef as well. Dynamite fishing reduces the structural complexity of reefs by the pulverizing effect of the blast on corals (Fox et al. 2005). This affects the more delicate branching forms greater than the massive forms. As discussed above, these branching forms provide reef complexity and habitat for small animals such as crabs, shrimps, and fishes and their destruction ultimately decreases the sustainable fisheries yield on a reef (Graham & Nash 2013).

Cyanide fishing also results in the loss of coral cover (Barber & Pratt 1998). Cyanide is most often used to target individual fishes and is sprayed into crevices and coral thickets where fishes hide. This serves to stun and immobilize the fish, making them easy to scoop up with nets. Direct exposure of corals to cyanide causes rapid signs of stress such as production of mucous and sloughing of tissue that can lead to coral mortality. The area of coral cover that is destroyed when using the amount of cyanide needed to catch one fish for the live reef food fish trade is estimated at one square meter per fish (Cesar 2000). In addition, the fishes often remain hidden within coral crevices and the fishermen pound apart and destroy the coral to extract the stunned fishes, which typically leads to substantial damage to the coral reef habitat.

d. Construction of Structures on Coral Reefs

The construction of concrete structures on coral reefs has many negative impacts on coral reef communities (Burke et al. 2011). The simple act of construction of buildings on Mischief Reef and McKennan Reef clearly displaced reef habitat by causing a reduction in the space habitable by reef organisms that support fisheries. This has the same effect as removal of coral, as discussed above.

In addition to the physical reduction of reef caused by the footprint of the buildings, there are obvious alterations to the marine habitat in proximity to the buildings. The photos demonstrate a dark coloration of the sea bed in the proximity of structures that is likely caused by the pile-up of dredged and building material and an alteration of the normal plants and animals in residence on these materials. The darker coloration of the sea bed in direct proximity to the living quarters may be due to the fertilization of algal growth from waste water (eutrophication). This can cause a permanent shift from a coral-based community to an algal-based community that can have detrimental effects on fisheries and the environment (Graham et al. 2013).

Water pollution from the leaching of building materials of the structures, from other materials used and discarded by humans living in the structures, and from boat and helicopter activity is expected to compound environmental effects of this construction. In addition, the Mischief Reef structures were accompanied by obvious dredging activities to allow boat access. Habit was altered by direct physical removal of bottom corals and rocks and the discard of these materials on the adjacent reefs.

In addition to the habitat changes described above, the presence of these hard structures on Mischief and McKennan reefs will have long term significant and harmful effects on the reef environment because of the action of waves and currents around the structures. Significant wave action will occur on these reefs as a result of the many storms and strong winds that occur in the South China Sea. It is well established that the presence of man-made hard structures will alter wave action and current direction and cause sand and loose material to be transported away from the area of hard structures (Burke et al. 2011). Wave energy is typically directed downward and away from the structure and causes erosion around the base of the hard structures (similar to what is experienced around feet when standing on a beach where waves periodically immerse the feet). This in turn undermines the support for hard structures such as adjacent corals or the buildings themselves.

With the strength of waves expected on Mischief Reef and McKennan Reef during storm conditions, sand and loose rubble will eventually erode areas around the structures and will cause significant and harmful changes to the marine environment. With the era of stronger and stronger typhoons occurring in the South China Sea because of climate change, the effects of waves could have catastrophic effects on these hard structures. Because these structures and the Spratly Islands are exposed without any surrounding land area to break up the power of wind, their exposure is extreme. It is not unreasonable to assume that eventually these structures will be hit by a powerful storm and experience structural degradation. The effects of the potential destruction of these concrete structures on the adjacent coral reefs would likely cause permanent and harmful changes to this environment.

3. Projected Recovery Time After Events Harming Coral Reefs

The recovery of coral reefs after disturbances such as the extraction, dynamite fishing and cyanide fishing that Chinese fishermen have undertaken on Scarborough Shoal can take a long time and in some cases, is not assured (Graham et al. 2011, Gomez et al. 2014). It can take years or decades for similar numbers of corals to replenish a reef after corals are destroyed (Done et al. 2010). Many factors influence how long it takes for reefs to recover after disturbances (Polidoro & Carpenter 2013). A major factor influencing this is the very slow growth of corals themselves which typically grow only 3 to 165 millimeters per year in the Pacific Ocean depending on the type of coral (Dullo 2005).

Another major factor is that the reduction of corals also influences the number of reproducing individuals so replenishment of new juvenile recruits is reduced by coral extraction and destruction. Some areas may never recover because of the lack of potential parent populations (Gomez et al. 2014). In some cases, recruitment of new corals can take place if they are in proximity to healthy reefs whose larvae can potentially be carried to destroyed reefs by ocean currents. However, unregulated and destructive fishing practices can reduce the resilience or ability of reefs to recover because they upset the balance of feeding types on the reef (Hughes et al. 2010).

Therefore, one of the most important factors in coral reef recovery is the presence or absence of continued disturbance by humans (Gilmour et al. 2013). The evidence on Scarborough Shoal indicates there has been a series of disturbances by Chinese fishermen over a long period of time (at least 1998-2012). This chronic human disturbance coupled with the relative isolation of Scarborough Shoal from other shallow reefs that could potentially replenish new coral recruits will likely retard the recovery of these reefs. Coral reefs in the Spratly Islands areas may recover more easily than Scarborough Shoal because of the proximity of numerous reefs. However, this recovery may only be viable if human disturbance ceases to be a major factor.

B. Exploitation of Endangered and Vulnerable Species

1. Importance of the Continued Survival of Endangered and Vulnerable Species to the Health of the Marine Environment and for Human Well-Being

The functioning of ecosystems depends on the interactions among plants, animals and many other aspects of the environment. In turn, human societies depend on the variety of plants and animals or, biodiversity, for food, medicine, fibers and many other renewable resources (Diaz et al. 2006). Human well-being depends on the proper functioning of ecosystems for access to useable water and for the very air we breathe. Fisheries and aquaculture and the marine environment provide nearly 17% of the global intake of animal protein (FAO 2012). In the Philippines, over half of the animal protein consumed comes from fish (Espejo-Hermes 2004).

The oceans contain 97% of the world's water and the functioning of marine ecosystems support the quality of the atmosphere of our planet. The loss of biodiversity can seriously affect the ecosystem services that humans depend on. We must preserve biodiversity because humans rely on biodiversity for their very existence. All components of biodiversity, including where the biodiversity is found and how it is arranged in the ecosystem, influences the ecosystem services upon which humans depend. The loss of biodiversity is dramatically accelerating because of human interactions with nature. Many national governmental entities expend huge amounts of resources to help ensure that human impacts on nature are minimized and that endangered species are protected. Adherence to these environmental and biodiversity policies by all nations is required for them to be effective.

2. Specific Mechanisms of Harm to Endangered Species Through Repeated Extraction

a. Giant Clams

Giant clams are among the most endangered of all marine animals because of their economic desirability and importance as cultural icons in many countries bordering the Indian and Pacific Oceans (Wells 1997, Toonen et al. 2012). Their easy accessibility and value as food is one of the reasons giant clams have been exploited by humans by as long as 125,000 years ago (Richter 2008). The appearance of giant clams in native art and as ornaments of cultural significance is testimony not only to their large size but also to their spectacular appearance. The shell that can reach over 120 cm in length in the largest of the species, the endangered *Tridacna gigas* (as taken by Chinese nationals at Scarborough Shoal and Second Thomas Shoal), and continues to be a valuable ornamental curio being sold on the black market. The Near Threatened Elongate Giant Clam, *Tridacna maxima*, also reaches the substantial size of 35 cm in shell length and was also taken by Chinese fishermen at Scarborough Shoal. The main muscle that serves to open and close the two sides of the shell of both species, the adductor muscle, is also believed by Chinese to have aphrodisiac power (Wells 1997).

These factors have led to the local extinction of giant clams in many areas because of overexploitation (Toonen et al. 2012). The ease of extraction of giant clams by gleaning on shallow reefs demonstrates how easily these species can be depleted in an area. The dramatic reduction of abundance of giant clams in the wild led to their listing as Threatened Species (IUCN Red List of Threatened Species) and the recognition of the need to regulate their trade through CITES. The removal of giant clams from reef environments reduces the complexity of the reef and its ability to support larger numbers and diversity of fish. It also eliminates interactions between giant clams and other species on the reefs that are important to the functioning of the ecosystem. For example, some species that clean parasites from fishes (helping to maintain a healthy environment for fishes on reef) utilize giant clams as cleaning stations.

b. Marine Turtles

Marine turtles also have both traditional economic and cultural value (Márquez 1990). All marine turtles have high commercial value. They have been exploited by humans since pre-historic times as a protein source and are currently prized as a delicacy. This is particularly true of their eggs. They are iconic in many countries and have traditionally been used in ancient rituals and as objects of veneration as sacred animals. Their near universal recognition marks them as one of the charismatic marine animals that serve as a rallying point for marine conservation efforts (McClenachen et al. 2012). Indeed, their charisma is such that per species, there are more marine biologists that devote their careers to studying the seven species of marine turtles than any other marine species globally.

The commercialization of marine turtle exploitation since the middle of the 20th Century led to extreme depletions of sea turtle abundances. Currently, they are under numerous additional threats such as from coastal development of their nesting sites, by catch in many types of fisheries and illegal fishing and are of particular concern for conservation effort (Wallace et al. 2011). These threats continue to lead to reductions in abundance and a clear recognition of the status as endangered species according to the IUCN. Their continued poaching, such as observed on Scarborough Shoal, despite the international recognition of the need to conserve these charismatic animals, is a particularly egregious flaunting of international norms by any fishermen. The removal of turtles on coral reefs also eliminates the role they play in the functioning of the reef ecosystem. For example, certain marine turtles are one of the few species that can graze on the seagrasses that are typically close to and part of the reef ecosystem, which most marine species lack the ability to digest. These marine turtles therefore provide a vital link between the substantial production that seagrasses provide and the rest of the ecosystem.

c. Sharks

Many of the sharks of the South China Sea are considered Threatened with extinction and, in general, are severely overfished (Dulvy et al. 2014). Unregulated fishing of sharks by Chinese fishermen at Scarborough Shoal could negatively impact its fisheries potential. Sharks are top predators and as such, occupy an important role in marine ecosystems. Their activities serve to balance abundances of species at lower levels on the food chain and their removal is known to adversely affect abundances of animals harvested by man (Heithaus et al. 2008). For example, sharks feed on rays who in turn feed on shellfishes such as scallops, and the removal of sharks increases the abundance of rays who feed more intensely and dramatically reduce the numbers of shellfish.

Sharks are particularly vulnerable to overexploitation and very slow to recover from overfishing because they are very slow growing, typically give birth to only a few young per year and can live for a very long time. The international recognition that sharks need to be exploited and traded with careful consideration has led to the recent listing of some species on CITES (Scanlon 2013) and the call for national plans of action for shark conservation by the Food and Agriculture Organization of the United Nations (Fischer et al. 2013). The extraction of sharks at Scarborough Shoal without fisheries guidelines in place could be detrimental to the environmental health of this isolated reef community.

d. Use of Cyanide as a Fishing Method

In addition to direct habitat destruction that ultimately leads to reduction of the capability of the reef to support an abundance of fishes, cyanide fishing is often very inefficient and wasteful (Rubec 1988, Rubec et al. 2000). Studies of this practice indicate that a certain percentage of fishes die within hours or weeks of capture because of the toxic effects of cyanide on their livers and other tissues. This can be as high as 75% death rate soon after capture and up to 30% of the survivors die within weeks.

VI. Conclusion

The degradation of fragile coral reef ecosystems by destructive fishing practices by Chinese nationals at Scarborough Shoal and Second Thomas Shoal, and the construction of buildings by China at Mischief Reef and McKennan Reef, has repercussions beyond the immediate vicinity of the reefs. These activities not only reduce the potential sustainable fisheries on the reefs themselves, but also can have detrimental effects on biodiversity and fisheries in the greater Philippine archipelago. This is because the prevailing currents from Scarborough

Shoal and the Spratly Islands can bring larvae and therefore new potential recruits to replenish biodiversity and fisheries along western Luzon, Palawan, and the inner seas of the Philippines. This is not only important as a source of protein and livelihoods from Philippine fisheries, but also as a potentially important means for the Philippines to help protect its natural heritage as the global epicenter of marine biodiversity (Carpenter & Springer 2005; Sanciangco et al. 2013).

With more marine species per unit area than any other region on earth and with many threats to its marine realm (Roberts et al. 2002) the Philippines is seen as the 'Amazon River Basin of the Seas'. The Philippines has the responsibility of stewardship over this global natural treasure. Because of the connectivity of the eastern South China Sea to the greater Philippine archipelago through prevailing ocean currents, it is important to ensure the sustainable stewardship of Scarborough Shoal and the Spratly Islands.

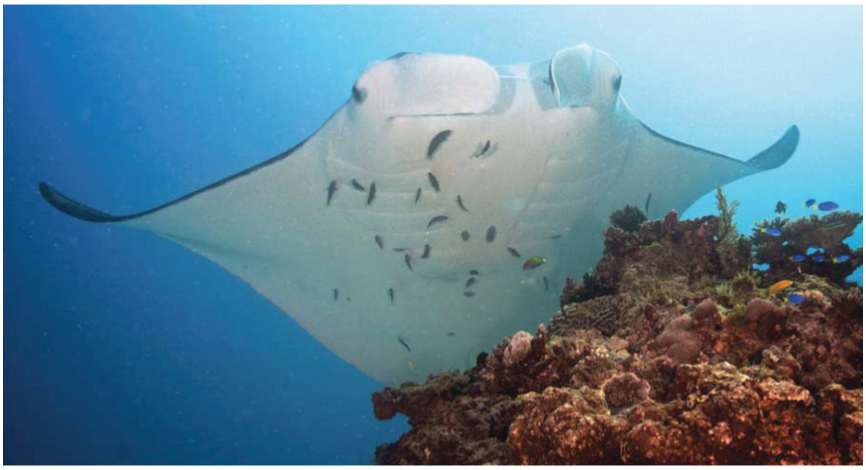

Fig. 15. Manta ray being cleaned on a reef by many cleaner fishes.

In addition to the broader impacts on biodiversity in the Philippines, coral reef degradation of Scarborough Shoal and the Spratly Islands affects the wider marine ecosystem of the South China Sea. Coral reefs provide ecosystem services to the open ocean around these reefs. For example, many tunas, sharks and other fishes that spend most of their life in the open ocean visit coral reefs and feed in proximity to reefs for substantial periods because of the abundance of forage fish around reefs. Coral reef degradation decreases the capacity of reefs to support these frequent visitors. Other open ocean species avail themselves of coral reef services to help maintain the health. For example, giant manta rays, which generally spend most of their time in deep water, visit coral reefs and are swarmed by numerous cleaner fishes (shown in Figure 15) that remove parasites. Degradation of reefs reduces the capacity of the reef for these cleaner organisms and can impact the health of marine fishes of the open ocean ecosystem.

To sustain the human benefits of the reef systems of the eastern South China Sea, degradation of the reefs by Chinese fishermen through destructive fishing methods, exploitation of endangered species, and construction of hard structures must stop.

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Prof. Kent E. Carpenter, Ph.D.

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Current and Recent Teaching Assignments at ODU - Structured Courses

Ichthyology - Biol. 420/520. Spring 1996. Fall 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010.
Marine Biology - Biol. 232. Fall 1996. Spring 1997
Evolution - Biol. 203. Spring 1998.
Marine Biology - Biol. 331. As **Teletechnet** Course: Spring 1999, 2001, 2003. Non-teletechnet Spring 2000, 2002, 2006, 2007, 2008, 2009.
Systematics and Speciation, Biol. 731/831. Spring, 2010.
Marine Conservation Biology, Biol. 496/596. Spring 2012, 2013, 2014.

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***Carpenter, K. E.**, A.W. Fast, V.L Corre, J.W. Woessner, and R.L. Janeo. 1986. The effects of water depth and circulation on the water quality and production of *Penaeus monodon* in earthen ponds. *Proc. First Asian Fisheries Forum*. pp. 21-24.

*Biña, R. and **K. E. Carpenter**. 1978. Remote sensing of coral reefs using LANDSAT: follow-up studies. *Proc. 12th Int'l. Symp. Remote Sensing.*

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TECHNICAL REPORTS (specifically for the period 1996 to present):

1- Carpenter, K. E. and Myint Pe. 1997. *Identification Guide to the Proposed Marine Fishery Statistical Units of Myanmar*. FAO Regional Office for Southeast Asia and the Pacific, Bangkok. 53 pp.

2- Dauer, D. M., H. G. Marshall, K. E. Carpenter, M. F. Lane, R. W. Alden III, K. K. Nesius, L. W. Haas. 1998. Virginia Chesapeake Bay Water Quality and Living Resources Monitoring Programs: Executive Report, 1985-1996. To the Virginia Department of Environmental Quality. 28 pp.

3- Carpenter, K. E. and M. F. Lane. 1998. Zooplankton status and trends in Virginia tributaries of the Chesapeake Bay: 1985-1996. To the Virginia Department of Environmental Quality. 28 pp.

4- Dauer, D. M., M. F. Lane, H.G. Marshall, K. E Carpenter, L.A. Sprague, R. J. Diaz. 1999. Status and trends in water quality and living resources in the Virginia Chesapeake Bay: 1985-1998. Virginia Department of Environmental Quality. 458 pp.

5- Carpenter, K. E. 2000. Mesozooplankton linkages to water quality from the lower Chesapeake Bay basin.Virginia Department of Environmental Quality. 99 pp.

6- Dauer, D. M., M. F. Lane, H.G. Marshall, K. E Carpenter, and Donat, J. R. 2002. Status and trends in water quality and living resources in the Virginia Chesapeake Bay: 1985-2000.

7- Carpenter, K. E., F. B. Crock, and M. F. Lane. 2002. A comparison of the hensen stempel pipette and coefficient of variation stabilizing methods of counting mesozooplankton using archived samples and historical data. Virginia Department of Environmental Quality.
8- Dauer, D. M., H.G. Marshall, K. E Carpenter, Donat, J. R., and M. F. Lane. 2003. Status and trends in water quality and living resources in the Virginia Chesapeake Bay: 1985-2001. Virginia Department of Environmental Quality.

RESEARCH PAPERS PRESENTED AT PROFESSIONAL MEETINGS OR SEMINARS (* invited paper) (person presenting listed first):

1- Carpenter, K. E., R.I. Miclat, V.D. Albalejedo and V.T. Corpuz. 1981. The influence of substrate structure on the local abundance and diversity of Philippine reef fishes. *Fourth Intl. Coral Reef Symp. Manila, Philippines. 1981.*
2- Carpenter, K. E., A.W. Fast, V.L Corre, J.W. Woessner, and R.L. Janeo. 1986. The effects of water depth and circulation on the water quality and production of *Penaeus monodon* in earthen ponds. *First Asian Fisheries Forum, Manila, Philippines, 1985.*
3- Carpenter, K. E. 1984. Paradigm clash in the systematic triumvirate: classifications of the Caesionidae (Pisces, Lutjanoidea). *Tester Symposium, University of Hawaii, Honolulu, 1984.*
4- Carpenter, K. E. 1987. Optimal quantitative evolutionary, cladistic, and phenetic classifications of fusilier fishes (Perciformes, Percoidei). *American Museum of Natural History Seminar Series, New York, July 12, 1987.*
5- Carpenter, K. E. 1990. Optimal phylogenetic Linnaean classifications of the Caesionidae (Perciformes: Lutjanoidea). *American Society of Ichthyologists and Herpetologists, University of Charleston, South Carolina, June 14-18, 1990.*
6- Carpenter, K. E., B. B. Collette, and J. L. Russo. 1992. Stable and unstable classifications of scombroid fishes. *American Society of Ichthyologists and Herpetologists, University of Illinois, Urbana-Champaign, June 4-10, 1992.*
7- Carpenter, K. E. 1992. A method for choosing optimal cladistic and quantitative evolutionary systematic Linnaean classifications of fusilier fishes (Perciformes:Caesionidae). *Society of Systematic Biologists, University of California, June 17-21, 1992.*
8- Carpenter, K. E. 1993. Unstable and stable classifications of fishes. *Workshop on Deepsea Fishes of the Red Sea, Eilat, Israel, January 13-20, 1993.*
9- Carpenter, K. E. 1994. Geometric morphometrics of emperor snappers (Perciformes): characters for phylogenetic inference? *American Society of Ichthyologists and Herpetologists, University of Southern California, Los Angeles, June 2-8, 1994.*
10- Carpenter, K. E. 1997. The status of systematic ichthyology in the Western Central Pacific Ocean. *Census of Fishes Workshop, Scripps Institute of Oceanography, March 13-14, 1997* (attendance sponsored by the Alfred P. Sloan Foundation).
11- Orrell, T. M. and K. E. Carpenter. 1997. Phylogenetic relationships of the family Sparidae (Perciformes: Percoidei). *American Society of Ichthyologists and Herpetologists, University of Washington, Seattle June 26-July 2, 1997.*
*12-Carpenter, K. E. 1997. The future of ichthyological research in the tropical Indo-Pacific. Keynote address (50 minutes) for concluding workshop of the same name at the *Fifth Indo-Pacific Fish Conference, Noumea, New Caledonia, November 3-8 1997* (primary support for attendance at the conference came from the conference organizing committee).

13- Carpenter, K. E. 1999. A phylogeny of the genera of Sparidae based on osteology. *Virginia Academy of Sciences Annual Meetings, Old Dominion University, Norfolk, 26-28 May, 1999.*
14- DeGravelle, M. J. and K. E. Carpenter. 1999. Systematics of the genus *Selene* (Perciformes: Carangidae). *Virginia Jour. Sci.* 50(2):98.
15-LoGalbo, A. M. and K. E. Carpenter. 1999. Osteological comparison of the percoid families Lethrinidae and Sparidae. *Virginia Jour. Sci.* 50(2):100. [won best student paper award in biology]
16- Carpenter, K. E. and T. M. Orrell. 1999. Congruence between osteological and molecular phylogenies of the genera of Sparidae (Percoidei; Perciformes). *American Society of Ichthyologists and Herpetologists, Penn State University, 24-30 June, 1999.*
*17- Carpenter, K. E. and T. M. Orrell. 2000. Molecular versus morphological evidence: Phylogenetic pattern in sparoid fishes. *International Symposium on Diversity of Fishes held in Commemoration of the Tenth Anniversary of His Majesty The Emperor's Accesssion to the Throne. National Science Museum, Tokyo, Japan. 24-25 February 2000.*
18- Carpenter, K. E. 2000. A phylogeny of sparoid genera (Perciformes, Percoidei) based on morphology. *American Society of Ichthyologists and Herpetologists Annual Meeting, La Paz, Mexico, 14-20 June, 2000.*
19- Carpenter, K. E. and T. M. Orrell. 2000. Molecular versus morphological evidence: Phylogenetic pattern in sparoid fishes. *Old Dominion University, Biology Department Seminar Series*. 9/2000.
20- Carpenter, K. E. and T. M. Orrell. 2001. Molecular versus morphological evidence: Phylogenetic pattern in sparoid fishes. Invited paper. *6th Indo-Pacific Fish Conference. Durban, South Africa*. 5/2001.
21- Carpenter, K. E., A. H. Savitzky, V. R. Townsend Jr., and T. M Berra. Does the lateral line nerve play a role in the auditory function of the swim bladder in the nurseryfish, *Kurtus gulliveri* (Perciformes: Kurtidae)? *American Society of Ichthyologists and Herpetologists Annual Meeting, Manaus, Brazil, 27 June - 1 July, 2003.*
22- Berra, T. M, K. E. Carpenter, J.M. Humphries. The unique swim bladder of the nurseryfish, Kurtus gulliveri, (Perciformes) and its potential role in hearing. *American Society of Ichthyologists and Herpetologists Annual Meeting, Manaus, Brazil, 27 June - 1 July, 2003.*
23- Smith, M.L. and K. E. Carpenter. Species richness and endemism are concentrated on plate boundaries in the Western Central Atlantic Ocean. *American Society of Ichthyologists and Herpetologists Annual Meeting, Manaus, Brazil, 27 June - 1 July, 2003.*
24- Smith-Vaniz, W.F. and K. E. Carpenter. Review of the jack crevalles, *Caranx hippos* complex (Teleostei: Carangidae). *American Society of Ichthyologists and Herpetologists Annual Meeting, Norman, Oklahoma, 26-31 May 2004.*
25- Carpenter, K. E. and V. G. Springer. The center of the center of marine biodiversity: the Philippine Islands. *American Society of Ichthyologists and Herpetologists Annual Meeting*, *Norman, Oklahoma, 26-31 May 2004.* Also given at as an invited seminar (50 minute version): *Fish Division, National Museum of Natural History, November 2003; Conservation International, November 2003; The National Museum, Manila, Philippines, September 2004; Marine Science Institute, University of the Philippines, Diliman, September 2004; San Carlos University, Cebu Philippines, September, 2004; Department of Biological Sciences, ODU, October 2004; Rotary Club Manila February 2005; Seventh Indo-Pacific Fish Conference, Taipei May 2005* (**Plenary address**); *Food and Agriculture Organization of the*

United Nations, Rome, Italy, September, 2007; *Biodiversity Conference, Presided by Philippine President Gloria Macapagal-Arroyo, Verde Island, Batangas, November* 2006.

25- Carpenter, K. E., A. R. Mahon, J. M. Martin, and L. B. Romena-Regis. Phylogeography of the shortfin scad, *Decapterus macrosoma* (Perciformes, Carangidae) from the Philippines. *American Society of Ichthyologists and Herpetologists Annual Meeting*, *Tampa, Florida, 6-11 July 2005.*

25- Mahon, A. R. and K. E. Carpenter. A molecular phylogeny of the percoid superfamily Sparoidea based on the RAG1 gene. *American Society of Ichthyologists and Herpetologists Annual Meeting*, *Tampa, Floridae, 6-11 July 2005.*

25- Carpenter, K.E. and S.N. Stuart. The Global Marine Species Assessment Initiative, Biodiversity Hotspots and Key Biodiversity Areas. *Oceans. Honolulu, Hawaii, February 2006.* (Poster).

27- Carpenter, K.E. and S.L. Livingstone. The Global Marine Species Assessment: Laying the Foundation for Marine Conservation. *European Ichthyological Congress. Dubrovnik,Croatia, September 2007.* (Poster).

28- Carpenter, K.E. et al. (38 Co-authors). One third of reef building corals face extinction from climate change and local impacts. *International Coral Reef Symposium. Ft Lauderdale, Florida, July 2008.*

29- Carpenter, K.E. and S.L. Livingstone. The Global Marine Species Assessment: Laying the Foundation for Marine Conservation. *American Society of Ichthyologists and Herpetologists Annual Meeting, Montreal, Canada, July 2008.* (Poster).

*30-Carpenter, K. E., P. Barber, C. Ablan-Lagman, Marie A. Juinio-Meñez, E. Crandall, C. Starger, A. Ackiss, T. DeBoer, M. Lourdes Docoy, I. Laya Casilagan, S. Ibarra, A. Hanson, E. Jones, S. Mamauag, M. Olivares, J. Raynal, N. Romena, and E. Womack. Comparative Phylogeography of the Coral Triangle. **(Plenary Address**) *Eighth Indo-Pacific Fish Conference, Freemantle, Western Austraila, May-June, 2009.*

*31- Carpenter, K. E., P. Barber, C. Ablan-Lagman, Marie A. Juinio-Meñez, E. Crandall, C. Starger, A. Ackiss, T. DeBoer, M. Lourdes Docoy, I. Laya Casilagan, S. Ibarra, A. Hanson, E. Jones, S. Mamauag, M. Olivares, J. Raynal, N. Romena, and E. Womack. Concordant Marine Phylogeographic Pattern in The Philippines. *Asian Tropical Biology Conference, Bali, Indonesia, July 2010.*

*32- Carpenter, K. E. (**Plenary Address**), Scientific Discovery and the Urgent Need for Conservation at the Philippine Epicenter of Marine Biodiversity. *Fish Conservation Week Conference, Manila, Philippines, October 2010. Cebu Go Green Event, Cebu, Philippines October 2010. Jewelmer Invited Lecture, Manila, July, 2011.*

*33- Carpenter, K. E., H. Harwell, B. Polidoro, J. Sanciangco, M. Comeros-Raynal, A. Hines, L. Knapp, A. Calhoun, E. Stump. Extinction Risk and the Global Marine Species Assessment. Invited lectures: *Harte Research Institute, University of Texas Corpus Christi, Texas, October 2011; Old Dominion University, Biology Department Seminar Series*, *1/2011; Xiamen University, Xiamen, China, June 2011.*

*34-Carpenter, K. E., P. Barber, C. Ablan-Lagman, Marie A. Juinio-Meñez, E. Crandall, C. Starger, A. Ackiss, T. DeBoer, M. Lourdes Docoy, I. Laya Casilagan, S. Ibarra, A. Hanson, E. Jones, S. Mamauag, M. Olivares, J. Raynal, N. Romena, and E. Womack. Comparative Phylogeography of the Coral Triangle. *Invited Lecture, Xiamen University, Xiamen, China, June, 2011.*

*35- Carpenter, K. E., H. Harwell, B. Polidoro, J. Sanciangco, M. Comeros-Raynal, A. Hines. Developing a Regional Red List of Threatened Species and its Use for Management of Coral Reefs. *Coral Reefs of the Gulf Conference, Abu Dhabi, January, 2012*.

*36- Carpenter, K. E., P. Barber, C. Ablan-Lagman, Marie A. Juinio-Meñez, E. Crandall, C. Starger, A. Ackiss, T. DeBoer, M. Lourdes Docoy, I. Laya Casilagan, S. Ibarra, A. Hanson, E. Jones, S. Mamauag, M. Olivares, J. Raynal, N. Romena, and E. Womack. Comparative Phylogeography of the Coral Triangle and Implications for Marine Management. *Nha Trang University, Vienam, invited Departmental seminar, April, 2012.*

*37- Carpenter, K. E. Advanced Genomic Applications to Marine Science and Resource Management in Southeast Asia. *Pan-Pacific Advanced Study Institute. Dumaguete, Philippines, July 2012*.

*38- Carpenter, K. E. Partnerships for International Research and Education: Origins of Marine Biodiversity in the Coral Triangle. *PIRE Synthesis Meeting, Manila, Philippines, July 2012*.

*39- Carpenter, K. E., H. Harwell, B. Polidoro, M. Comeros-Raynal, T. Defex, A. Hines, E. Stump. Extinction Risk in the Marine Realm: Shattering the Myth and Paving the Way for Improved Marine Biodiversity Conservation. *Global Marine Species Assessment Workshop, Kingston, Jamaica, August, 2012*.

40- Carpenter, K. E., P. Barber, C. Ablan-Lagman, Marie A. Juinio-Meñez, E. Crandall, C. Starger, A. Ackiss, T. DeBoer, M. Lourdes Docoy, I. Laya Casilagan, S. Ibarra, A. Hanson, E. Jones, S. Mamauag, M. Olivares, J. Raynal, N. Romena, and E. Womack. Comparative Phylogeography of the Coral Triangle and Implications for Marine Management. *Florida Institute of Technology invited Biology Department Seminar, Melbourne, Florida. September, 2012. Repeated at Harbor Branch Oceanographic Institute, Ft. Lauderdale, FL. September 2012.*

*41- Carpenter, K. E., H. Harwell, B. Polidoro, M. Comeros-Raynal, T. Defex, A. Hines, C. Linardich, E. Stump, A. Goodpaster, J. Buchanan, C. Gorman, M. Harvey, J. Harrison, R. Peters. The Global Marine Species Assessment So Far: 2005-2012. *World Conservation Congress, Jeju, Korea, October, 2012*.

42- Carpenter, K. E., P. Barber, C. Ablan-Lagman, Marie A. Juinio-Meñez, E. Crandall, C. Starger, A. Ackiss, T. DeBoer, M. Lourdes Docoy, A. Hanson, E. Jones, A. Ackiss, A. Hines, J. Raynal. Comparative Phylogeography of the Coral Triangle. *ODU Biology Department Seminar, January 2013*.

43- Carpenter, K.E. Philippine Habitat Richness as an Explanation for its Global Epicenter of Marine Biodiversity. *Invited talk, University of the Philippines Marine Science Institute. March 2013.*

44- Carpenter, K.E., Sanciangco, J.C., Etnoyer, P.J., Moretzsohn, F. Habitat Availability and Heterogeneity and the Indo-Pacific Warm Pool as Predictors of Marine Species Richness in the Tropical Indo-Pacific. *Ninth Indo-Pacific Fish Conference. Okinawa, July 2013.*

INSTITUTIONAL GRANTS AWARDED (specifically for period 1996 to present, numerous grants and contracts awarded and administered during work with FAO, 1991-1995, and with other previous jobs and during graduate studies):

1- Marshall, H. (Principal Investigator); R. Alden and K. E. Carpenter (Co-Principal Investigators). 1996. *Chesapeake Bay Monitoring Program - Plankton Monitoring Component*. Va. Dept. Of Environmental Quality. 1-12/96. Funding $185,000

2- Carpenter, K. E. (Principal Investigator). 1997. *Chesapeake Bay Monitoring Program - Zooplankton Monitoring Component*. Va. Dept. Of Enviro. Quality. 1-12/97. Funding $95,491
3- Dauer, D. (Principal Investigator); Alden, Carpenter, Jones, Marshall, Messing, Lane, Winfield (Co-Principal Investigators). 1997. *Representation of Virginia Monitoring Program at Chesapeake Bay Program Subcommittee and workshop Meetings*. Va. Dept. Of Enviro. Quality. $13,638.
4- Dauer, D. (Principal Investigator); Alden, Carpenter, Marshall (Co-Principal Investigators). 1997. *Development of a Real-Time Data Interpretation System for Special Reports and Presentations for the Chesapeake Bay Program*. Va. Dept. Of Enviro. Quality. $25,383.
5- Dauer, D. (Principal Investigator); Alden, Carpenter, Marshall (Co-Principal Investigators). 1997. *Participation in Conference Calls and Meetings in Support of the 1997 Reevaluation*. Va. Dept. Of Enviro. Quality. $15,000.
6- Carpenter, K. E. (Principal Investigator). 1997. *Implement Collection of Zooplankton Community Ash Free Dry Weight Biomass Estimates*. Va. Dept. Of Environ. Quality. 7-10/97. Funding $10,950.
7- Carpenter, K. E. (Principal Investigator). 1997. *Development of a Uniform Bay-Wide Zooplankton Diversity Index*. Va. Dept. Of Environmental Quality. 7-10/97. Funding $4,844
8- Carpenter, K. E. (Principal Investigator). 1998. *Chesapeake Bay Monitoring Program - Zooplankton Monitoring Component*. Va. Dept. Of Environmental Quality. 1-12/98. Funding $97,878.
9- Carpenter, K. E. (Principal Investigator). 1998. *Field guide to the living marine resources of Namibia*. Food and Agriculture Organization of the United Nations. Funding: $20,000.
10- Carpenter, K. E. (Principal Investigator); H. Marshall (Co-Principal Investigator). 1998. *Plankton split sampling for the Maryland and Virginia monitoring programs*. Va. Dept. of Environmental Quality. Funding: $14,537.
11- Dauer, D, H. Marshall, K. Carpenter, A. Messing (Co-Principal Investigators). 1998. *Update of status and trends in water quality and living resources in the Virginia Cheseapeake Bay through 1997*. Va. Dept. of Environmental Quality. Funding: $30,000.
12- Carpenter, K. E. (Principal Investigator). 1999. *Chesapeake Bay Monitoring Program - Zooplankton Monitoring Component*. Va. Dept. Of Environmental Quality. 1-12/99. Funding $101,006.
13- Dauer, D, M. Lane, H. Marshall, K. Carpenter, A. Messing (Co-Principal Investigators). 1999. *Update of status and trends in water quality and living resources in the Virginia Cheseapeake Bay through 1998.* Va. Dept. of Environmental Quality. Funding: $50,000.
14- Carpenter, K. E. (Principal Investigator); H. Marshall (Co-Principal Investigator). 1999. *Plankton sampling Enhancement*. Va. Dept. of Environmental Quality. Funding: $6,176.
15- Carpenter, K. E. (Principal Investigator). 2000-2001. FAO of the United Nations project to revise the Species Identification Guide to Living Marine Resources of the Western Central Atlantic. $15,000.
16- Carpenter, K. E. (Principal Investigator). 2000. *Chesapeake Bay Monitoring Program - Zooplankton Monitoring Component*. Va. Dept. Env. Quality. 1-12/00. Funding $103,834.
17- Dauer, D, M. Lane, H. Marshall, K. Carpenter, (Co-Principal Investigators). 2000. *Update of status and trends in water quality and living resources in the Virginia Cheseapeake Bay through 1999.* Va. Dept. of Environmental Quality. Funding: $50,000.

18- Carpenter, K. E. (Principal Investigator). 2000. *Plankton Field Sampling Coordination*. Va. Dept. of Environmental Quality. Funding: $16,000.
19- Carpenter, K. E. (Principal Investigator); H. Marshall (Co-Principal Investigator). 2000. *Plankton split sampling program*. Va. Dept. of Environmental Quality. Funding: $3,000.
20- Carpenter, K. E. (Principal Investigator). 2000. *Zooplankton Data Analysis*. Va. Dept. of Environmental Quality. Funding: $3,600.
21- Carpenter, K. E. (Principal Investigator). 2001. *Chesapeake Bay Monitoring Program - Zooplankton Monitoring Component*. Va. Dept. Of Environmental Quality. 1-12/01. Funding $117,966.
22- Dauer, D, H. Marshall, K. Carpenter, and J. Donat. (Co-Principal Investigators). 2001. *Update of status and trends in water quality and living resources in the Virginia Cheseapeake Bay through 2000.* Va. Dept. of Environmental Quality. Funding: $15,000.
23- Carpenter, K. E. (Principal Investigator). 2001. *Species Identification Guide to Living Marine Resources of the Eastern Central Atlantic*. Food and Agriculture Organization of the United Nations. $30,000.
24- Carpenter, K. E. (Principal Investigator). 2002. *Chesapeake Bay Monitoring Program - Zooplankton Monitoring Component*. Va. Dept. Env. Quality. 1-12/02. Funding $144,025.
25- Dauer, D, H. Marshall, K. Carpenter, and J. Donat. (Co-Principal Investigators). 2002. *Update of status and trends in water quality and living resources in the Virginia Cheseapeake Bay through 2001.* Va. Dept. of Environmental Quality. Funding: $15,000.
26- Carpenter, K. E. (Principal Investigator). 2002. *Species Identification Guide to Living Marine Resources of the Western Central Atlantic*. Food and Agriculture Organization of the United Nations. Amendment $18,500.
27- Carpenter, K. E. (Principal Investigator). 2002. FAO of the United Nations project to revise the Species Identification Guide to Living Marine Resources of the Eastern Central Atlantic. Amendment. $5,000.
28- Carpenter, K. E. (Principal Investigator). 2003-2004. *Species Identification Field Guide to Angola*. Food and Agriculture Organization of the United Nations. $34,000.
29- Carpenter, K. E. (Principal Investigator). 2003. *Chesapeake Bay Monitoring Program - Zooplankton Monitoring Component*. Va. Dept. Of Environmental Quality. 1-12/03. $54,000.
30- Dauer, D, H. Marshall, K. Carpenter, and J. Donat. (Co-Principal Investigators). 2003. *Update of status and trends in water quality and living resources in the Virginia Cheseapeake Bay through 2002.* Va. Dept. of Environmental Quality. $15,000.
31- Carpenter, K. E. (Principal Investigator). 2004/2005. *Revision of FAO identification guide for the Eastern Central Atlantic*. Food and Agriculture Organization of the United Nations. $30,000.
32- Carpenter, K. E. (Principal Investigator). 2004. Marine Protected Area (MPA) Gap Analysis: Caribbean GIS Database. *The World Conservation Union (IUCN)*. $10,000.
32- Carpenter, K. E. (Principal Investigator). 2005-2006. *Global Marine Species Assessment.* The World Conservation Union (IUCN) and Conservation International. $217,930.
33- Carpenter, K. E. (Principal Investigator). 2007-2011. *Global Marine Species Assessment.* The World Conservation Union (IUCN) and Conservation International. $1,053,956.
34- Carpenter, K. E. (Co-Principal Investigator). 2008-2013. *Assembling the Euteleost Tree of Life.* National Science Foundation. $382,955.

35- Carpenter, K. E. (Principal Investigator). 2007-2014. *PIRE: Origins Of High Marine Biodiversity In The Indo-Malay-Philippine Archipelago: Transforming A Biodiversity Hotspot Into A Research And Education Hotspot.* National Science Foundation. $2,500,000.
36- Carpenter, K. E. (Principal Investigator). 2007-2012. *PIRE: Origins Of High Marine Biodiversity In The Indo-Malay-Philippine Archipelago: Transforming A Biodiversity Hotspot Into A Research And Education Hotspot. SUPPLEMENT for additional REUs.* National Science Foundation. $45,000.
37- Carpenter, K. E. (Principal Investigator). 2010-2013. *Global Marine Species Assessment. Extension.* The World Conservation Union (IUCN) and Conservation International. $604,692.
38- Carpenter, K. E. (Principal Investigator). 2011-2013. *Catalyzing New International Collaborations: Broadening PIRE Success in Southeast Asia to Test Hypotheses of the Origins of Coral Triangle and Sunda Shelf Marine Biodiversity and Build Collaborations in Vietnam and Thailand.* National Science Foundation, Planning Visit. $25,000.
39- Carpenter, K. E. (Principal Investigator). 2011-2012. *GMSA Assessment of Habitat Forming Bivalves* (ODURF 514331). $40,000.
40- Carpenter, K. E. (Principal Investigator). 2012-2013. *Thomas W. Haas Foundation for Marine Conservation*. $95,000.
41- Carpenter, K. E. (Principal Investigator). National Science Foundation. *Pan-Pacific Advanced Study Institute*. $98,993.
42-Carpenter, K. E. (Principal Investigator). 2012-2013. *Determining the effects of cultured pearl farming on shorefish biodiversity in lagoon environments of French Polynesia*. National Geographic Waitt Grant. $14,796.
43- Carpenter, K. E. (Principal Investigator). 2013-2014. *Thomas W. Haas Foundation for Marine Conservation*. $95,000.
44- Carpenter, K. E. (Principal Investigator). 2013-2016. National Science Foundation. *Documenting Diversity in the Apex of the Coral Triangle: Inventory of Philippine Marine Biodiversity*. $89,320.

TOTAL GRANTS AWARDED 1996-2011 with K. E. Carpenter as PI or CoPI =	$6,612,515
TOTAL GRANTS AWARDED 1996-2011 with K. E. Carpenter as CoPI =	$797,021
TOTAL GRANTS AWARDED 1996-2011 with K. E. Carpenter as PI =	**$5,815,494**

HONORS, AWARDS AND PRIZES:

- High Honors, (Magna Cum Laude) B.S. 6/75.
- Supplemental Education Opportunity Grant, 9/72 - 6/75.
- East-West Center Degree Participant Grant, 8/79 - 2/85.
- 4.0 GPA at graduation for Graduate School (40 hours structured course work), 9/79-12/85.
- Graduate Student Organization, University of Hawaii, Conference Travel Grant, 5/81.

- Delta Sigma Lambda Favorite Professor - 1997.
- Visiting Scientist Award, Smithsonian National Museum of Natural History 6/98.
- Visiting Scientist Award, Food and Agriculture Organization of the U.N., 11/99.
- Research Collaborator, Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution 2/2000-1/2001.
- Research Associate, Division of Fishes, Department of Zoology, National Museum of Natural History, Smithsonian Institution, 2/2001-1/2003; 1/2011-12/2013.
- Fulbright Senior Scholar Award, Silliman University, Dumaguete City, Philippines, 6/2011-11/2011.
- Fellow, California Academy of Sciences. 10/2011.

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

- Ichthyological Society of Japan.
- Society of Systematic Zoology.
- American Society of Ichthyologists and Herpetologists.
- Willi Hennig Society.
- Virginia Academy of Sciences

Annex 241

Affidavit of Asis G. Perez, Director, Bureau of Fisheries and Aquatic Resources, Republic of the Philippines (26 Mar. 2014)

REPUBLIC OF THE PHILIPPINES)
Makati City) S.S.

AFFIDAVIT

I, **ASIS G. PEREZ**, Director of the Bureau of Fisheries and Aquatic Resources (BFAR), respectfully state:

1. The BFAR is the government agency of the Republic of the Philippines responsible for the development, improvement, management and conservation of the country's fisheries and aquatic resources.

2. One of the primary functions of the BFAR in fulfilling this responsibility is the monitoring, control and surveillance of fishing activities within the waters under the jurisdiction of the Philippines, along with other law enforcement agencies.

3. Based on records, the BFAR has observed Chinese fishing activities during its patrols of the West Philippine Sea. One of the primary areas in which we have detected a high level of Chinese fishing activity is Bajo de Masinloc (Scarborough Shoal), off the Luzon coast, in the northern part of the West Philippine Sea. Chinese fishing activities are observed around Scarborough Shoal, but not in other parts of the northern part of the West Philippine Sea.

4. The Philippines has exercised fishing jurisdiction over Scarborough Shoal for many decades. BFAR enforces the laws, rules and regulations of our nation to ensure that endangered species are protected and that fishermen do not adopt illegal fishing methods that are harmful to the environment. On numerous occasions, Philippine law enforcement vessels have observed (and at times apprehended) Chinese fishing vessels near Scarborough Shoal for fishing endangered species such as giant clams and sea turtles or using other destructive fishing method.

5. Since April 2012, when the Chinese took control of Scarborough Shoal, Filipinos find it difficult to enter the shoal because the Chinese law enforcement vessels have created a "no fishing zone" around it. Chinese patrol vessels enforce this zone by threatening Filipino fishermen who attempt to fish at Scarborough.

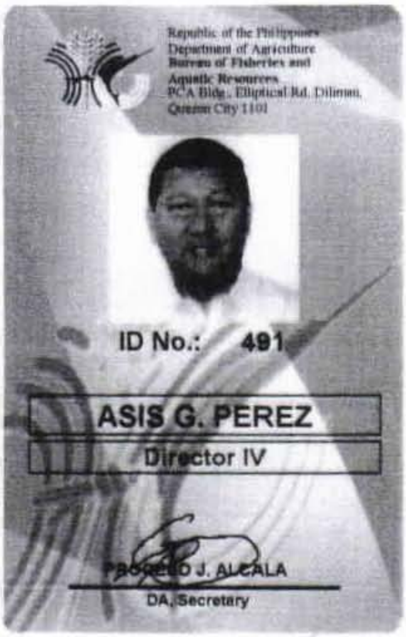
6. This conduct of the Chinese government, together with its enactment of new laws, such as the 2012 Hainan Regulations and the 2012 fishing ban, have created a deep sense of fear among Filipino fishermen that has significantly curtailed their fishing activities and severely impacted their ability to earn a livelihood.

IN WITNESS WHEREOF, I hereunto affix my signature this 26th of March, 2014 at Makati City.

ASIS G. PEREZ
Affiant

SUBSCRIBED AND SWORN TO before me this 26th day of March 2014 at Makati City, affiant showing me his BFAR ID No. 491, issued at Quezon City.

JOAN V. RAMOS-FABELLA
State Solicitor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BLOOD TYPE **"O"** SEX **Male** CIVIL STATUS **Married**

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EMPLOYEE'S SIGNATURE

Employee shall surrender this card when Bureau employment ceases or upon request.

Annex 242

Intentionally Omitted

Annex 243

John Foreman, *The Philippine Islands: A Political, Geographical, Ethnographical, Social and Commercial History of the Philippine Archipelago* (3d ed. 1906)

THE PHILIPPINE ISLANDS

A POLITICAL, GEOGRAPHICAL, ETHNOGRAPHICAL, SOCIAL AND COMMERCIAL HISTORY OF THE PHILIPPINE ARCHIPELAGO

EMBRACING THE WHOLE PERIOD OF SPANISH RULE

WITH AN ACCOUNT OF THE SUCCEEDING AMERICAN INSULAR GOVERNMENT

BY

JOHN FOREMAN, F.R.G.S.

THIRD EDITION, REVISED AND ENLARGED

WITH MAPS AND ILLUSTRATIONS

NEW YORK

CHARLES SCRIBNER'S SONS

1906

scribing one-tenth of the necessary amount, perhaps Americans would be induced to complete the scheme. The foreign banks established in the Islands are not agricultural, but exchange banks, and any American-Philippine Agricultural Bank which may be established need have little reason to fear competition with foreign firms who remember the house of Russell & Sturgis (*vide* p. 255) and also have their own more recent experiences. Philippine rural land is a doubtful security for loans, there being no free market in it.

Between the years 1902 and 1904 the Insular Government confiscated the arable lands of many planters throughout the Islands for delinquency in taxes. The properties were put up to auction; some of them found purchasers, but the bulk of them remained in the ownership of the Government, which could neither sell them nor make any use of them. Therefore an Act was passed in February, 1905, restoring to their original owners those lands not already sold, on condition of the overdue taxes being paid within the year. In one province of Luzon the confiscated lots amounted to about one-half of all the cultivated land and one-third of the rural land-assessment in that province. The $2,400,000 gold spent on the Benguet road (vide p. 615) would have been better employed in promoting agriculture.

Up to 1898 Spain was the most important market for Philippine tobacco, but since that country lost her colonies she has no longer any patriotic interest in dealing with any particular tobacco-producing country. The entry of Philippine tobacco into the United States is checked by a Customs duty, respecting which there is, at present, a very lively contest between the tobacco-shippers in the Islands and the Tobacco Trust in America, the former clamouring for, and the latter against, the reduction or abolition of the tariff. It is simply a clash of trade interests; but, with regard to the broad principles involved, it would appear that, so long as America holds these Islands without the consent of its inhabitants, it is only just that she should do all in her power to create a free outlet for the Islands' produce. If this Archipelago should eventually acquire sovereign independence, America's moral obligations towards it would cease, and the mutual relations would then be only those ordinarily subsisting between two nations.

By Philippine Commission Act dated April 30, 1902, a Bureau of Agriculture was organized. The chief of this department is assisted by experts in soil, farm-management, plant-culture, breeding, animal industry, seed and fibres, an assistant agrostologist, and a tropical agriculturist. Shortly after its organization, 18,250 packages of field and garden seeds were sent to 730 individuals for experiment in different parts of the Colony, with very encouraging results. The work of this department is experimental and investigative, with a view to the improvement of agriculture in all its branches.

In Spanish times agricultural land was free of taxation. Now it pays a tax not exceeding ·87 per cent. of the assessed value. The rate varies in different districts, according to local circumstances. For instance, in 1904 it was ·87 per cent. in Baliuag (Bulacan) and in Viñan (La Laguna), and ·68 per cent. in San Miguel de Mayumo (Bulacan). This tax is subdivided in its application to provincial and municipal general expenses and educational disbursements. The people make no demur at paying a tax on land-produce; but they complain of the system of taxation of capital generally, and particularly of its application to lands lying fallow for the causes already explained. The approximate yield of the land-tax in the fiscal year of 1905 was P.2,000,000; it was then proposed to suspend the levy of this tax for three years in view of the agricultural depression.

The Manila Port Works (*vide* p. 344), commenced in Spanish times, are now being carried on more vigorously under contract with the Atlantic, Gulf, and Pacific Company. Within the breakwater a thirty-foot deep harbour, measuring about 400 acres, is being dredged, the mud raised therefrom being thrown on to 168 acres of reclaimed land which is to form the new frontage. Also a new channel entrance to the Pasig River is to be maintained at a depth of 18 feet. The Americans maintain that there will be no finer harbour in the Far East when the work is completed. The reclaimed acreage will be covered with warehouses and wharves, enabling vessels to load and discharge at all seasons instead of lying idle for weeks in the typhoon season and bad weather, as they often do now. With these enlarged shipping facilities, freights to and from Manila must become lower, to the advantage of all concerned in import and export trade. The cost of these improvements up to completion is estimated at about one million sterling.

The port of Siassi (Tapul group), which was opened in recent years by the Spaniards, was discontinued (June 1, 1902) by the Americans, who opened the new coastwise ports of Cape Melville, Puerta Princesa, and Bongao (October 15, 1903) in order to assist the scheme for preventing smuggling between these extreme southern islands and Borneo. Hitherto there had been some excuse for this surreptitious trade, because inter-island vessels, trading from the other entry-ports, seldom, if ever, visited these out-of-the-way regions. In February, 1903, appropriations of $350,000 and $150,000 were made for harbour works in Cebú and Yloilo respectively, although in the latter port no increased facility for the entry of vessels into the harbour was apparent up to June, 1904. Zamboanga, the trade of which was almost nominal up to the year 1898, is now an active shipping centre of growing importance, where efforts are being made to foster direct trade with foreign eastern ports. An imposing Custom-house is to be erected on the new spacious jetty already built under American auspices. Arrangements have also been made for the Hong-Kong-Australia Steamship Company

A ROADSIDE SCENE IN THE BULACAN PROVINCE.

to make Zamboanga a port of call. Here, as in all the chief ports of the Archipelago, greater advantages for trade have been afforded by the administration, and one is struck with the appearance of activity and briskness as compared with former times. These changes are largely owing to the national character of the new rulers, for one can enter any official department, in any branch of public service, from that of the Gov.-General downwards, to procure information or clear up a little question " while you wait," and, if necessary, interview the chief of the department. The tedious, dilatory time and money-wasting " come later on " procedure of times gone by no longer obtains.

What is still most needed to give a stimulus to agriculture and the general material development of the Islands is the conversion of hundreds of miles of existing highways and mud-tracks into good hard roads, so as to facilitate communication between the planting-districts and the ports. The corallaceous stone abounding in the Islands is worthless for road-making, because it pulverizes in the course of one wet season, and, unfortunately, what little hard stone exists lies chiefly in inaccessible places—hence its extraction and transport would be more costly than the supply of an equal quantity of broken granite brought over in sailing-ships from the Chinese coast, where it is procurable at little over the quarryman's labour. From the days of the Romans the most successful colonizing nations have regarded road-making as a work of primary importance and a civilizing factor.

Among the many existing projects, there is one for the construction of railroads (1) from Manila (or some point on the existing railway) northward through the rich tobacco-growing valleys of Isabela and Cagayán, as far as the port of Aparri, at the mouth of the Cagayán River—distance, 260 miles; (2) from Dagúpan (Pangasinán) to Laoag (Ilocos Norte), through 168 miles of comparatively well-populated country; (3) from San Fabian (Pangasinán) to Báguio (Benguet), 55 miles; and three other lines in Luzon Island and one in each of the islands of Negros, Panay, Cebú, Leyte, and Sámar. A railway line from Manila to Batangas, *via* Calamba (a distance of about 70 miles), and thence on to Albay Province, was under consideration for many years prior to the American advent; but the poor financial result of the only (120 miles) line in the Colony has not served to stimulate further enterprise in this direction, except an endeavour of that same company to recuperate by feeder branches, two of which are built, and another (narrow gauge) is in course of construction from Manila to Antipolo, *via* Pasig and Mariquina (*vide* Railways, p. 265).

Since February, 1905, a Congress Act, known as the " Cooper Bill," offers certain inducements to railway companies. It authorizes the Insular Government to guarantee 4 per cent. annual interest on railway undertakings, provided that the total of such contingent liability shall not exceed $1,200,000—that is to say, 4 per cent. could be guaranteed on a maximum capital of $30,000,000. The Insular Government is further empowered under this Act to admit, at its discretion, the entry of railway material free of duty. As yet, no railway construction has been started by American capitalists. Projects *ad infinitum* might be suggested for the development of trade and traffic—for instance, a ship-canal connecting the Laguna de Bay with the Pacific Ocean; another from Laguimanoc to Atimonan (Tayabas); an artificial entry-port in Negros Island, connected by railway with two-thirds of the coast, etc.

Up to the present the bulk of the export and import trade is handled by Europeans, who, together with native capitalists, own the most considerable commercial and industrial productive "going concerns" in the Islands. In 1904 there were one important and several smaller American trading-firms (exclusive of shopkeepers) in the capital, and a few American planters and successful prospectors in the provinces. There are hundreds of Americans about the Islands, searching for minerals and other natural products with more hopeful prospects than tangible results. It is perhaps due to the disturbed condition of the Islands and the "Philippines for the Filipinos" policy that the anticipated flow of private American capital has not yet been seen, although there is evidently a desire in this direction. There is, at least, no lack of the American enterprising spirit, and, since the close of the War of Independence, several joint-stock companies have started with considerable cash capital, principally for the exploitation of the agricultural, forestal, and mineral wealth of the Islands. Whatever the return on capital may be, concerns of this kind, which operate at the natural productive sources, are obviously as beneficial to the Colony as trading can be in Manila—the emporium of wealth produced elsewhere.

There are, besides, many minor concerns with American capital, established only for the purpose of selling to the inhabitants goods which are not an essential need, and therefore not contributing to the development of the Colony.

The tonnage entered in Philippine ports shows a rapid annual increase in five years. Many new lines of steamers make Manila a port of call, exclusive of the army transports, carrying Government supplies, and in 1905 there was a regular goods and passenger traffic between Hong-Kong and Zamboanga. Still, the greater part of the freight between the Philippines and the Atlantic ports is carried in foreign bottoms. The shipping-returns for the year 1903 would appear to show that over 85 per cent. of the exports from the Islands to America, and about the same proportion of the imports from that country (exclusive of Government stores brought in army transports) were borne in foreign vessels. The carrying-trade figures for 1904 were 78·41 per cent. in British bottoms; 6·69 per cent. in Spanish, and 6·65 per cent. in American vessels. The desire to dispossess the foreigners of the carrying monopoly is not surprising, but it is thought that immediately-operative legislation to that end would be impracticable. The latest legislation on the subject confines the carrying-trade between the Islands and the United States to American bottoms from July 1, 1906. It is alleged that the success of the new regulations which may (or may not, for want of American vessels) come into force on that date will depend on the freights charged; it is believed that exorbitant outward rates would divert the hemp cargoes into other channels, and a large rise in inward freights would facilitate European competition in manufactured goods. Any considerable rise in freights to America would tend to counterbalance the benefits which the Filipinos hope to derive from the free entry of sugar and tobacco into American ports. The text of the Shipping Law, dated April 15, 1904, reads thus; "On and after July 1, 1906, "no merchandise shall be transported by sea, under penalty of forfeiture "thereof, between ports of the United States and ports or places of the "Philippine Archipelago, directly, or *via* a foreign port, or for any "part of the voyage in any other than a vessel of the United States. "No foreign vessel shall transport passengers between ports of the "United States and ports or places in the Philippine Archipelago, "either directly, or *via* a foreign port, under a penalty of $200 for each "passenger so transported and landed."

The expenses of the Civil Government are met through the insular revenues (the Congressional Relief Fund being an extraordinary exception). The largest income is derived from the Customs' receipts, which in 1904 amounted to about $8,750,000, equal to about two-thirds of the insular treasury revenue (as distinguished from the municipal). The total *Revenue and Expenditure* in the fiscal year 1903 (from all sources, including municipal taxes expended in the respective localities, but exclusive of the Congressional Relief Fund) stood thus:—

Total Revenue		$14,640,988
Total Expenditure	$15,105,374	
Excess of Expenditure over Revenue		464,386
	15,105,374	15,105,374

In 1903, therefore, Government cost the inhabitants the equivalent of about 46 per cent. of the exports' value, against 45 per cent. in Spanish times, taking the relative averages of 1890-94. The present abnormal pecuniary embarrassment of the people is chiefly due to the causes already explained, and perhaps partly so to the fact that the P.30,000,000 to P.40,000,000 formerly in circulation had two to three times the local purchasing value that pesos have to-day.

The "Cooper Bill," already referred to, authorizes the Insular Government to issue bonds for General Public Works up to a total of $5,000,000, for a term of 30 years, at 4½ per cent. interest per annum; and the municipalities to raise loans for municipal improvements up to a sum not exceeding 5 per cent. of the valuation of the real estate of the municipalities, at 5 per cent. interest per annum. For the purchase of the friars' lands a loan of $7,000,000 exists, bearing interest at 4 per cent. per annum, the possible interest liability on the total of these items amounting to about $2,000,000 per annum.

On November 15, 1901, the high Customs tariff then in force was reduced by about 25 per cent. on the total average, bringing the average duties to about 17 per cent. *ad valorem*, but this was again amended by the new tariff laws of May 3, 1905. Opium is still one of the imports, but under a recent law its introduction is to be gradually restricted by tariff until March 1, 1908, from which date it will be unlawful to import this drug, except by the Government for medicinal purposes only.

On August 1, 1904, a new scheme of additional taxation came into force under the "Internal Revenue Law of 1904." This tax having been only partially imposed during the first six months, the full yield cannot yet be ascertained, but at the present rate (P.5,280,970.96, partial yield for the fiscal year 1905) it will probably produce at the annual rate of $4,250,000 gold, which, however, is not entirely extra taxation, taking into account the old taxes repealed under Art. XVII., sec. 244. The theory of the new scheme was that it might permit of a lower Customs tariff schedule. The new taxes are imposed on distilled spirits, fermented liquors, manufactured tobacco, matches, banks and bankers, insurance companies, forestry products, valid mining concessions granted prior to April 11, 1899, business, manufactures, occupations, licences, and stamps on specified objects (Art. II., sec. 25). Of the taxes accruing to the Insular Treasury under the above law, 10 per cent. is set apart for the benefit of the several provincial governments, apportioned *pro rata* to their respective populations as shown by the census of 1903; 15 per cent. for the several municipal governments, provided that of this sum one-third shall be utilized solely for the maintenance of free public primary schools and expenditure appertaining thereto. In the aforesaid distribution Manila City ranks as a municipality and a province, and receives apportionment under this law on the basis of 25 per cent. (Art. XVII., sec. 150).

From the first announcement of the projected law up to its promulgation the public clamoured loudly against it. For months the public organs, issued in Spanish and dialect, persistently denounced it as a harbinger of ruin to the Colony. Chambers of Commerce, corporations and private firms, foreign and native, at meetings specially convened to discuss the new law, predicted a collapse of Philippine industry and commerce. At a public conference, held before the Civil Commission on June 24, 1904, it was stated that one distillery alone would have to pay a yearly tax of P.744,000, and that a certain cigar-factory would be required to pay annually P.557,425. Petitions against the coming law were sent by all the representative trading-bodies to the Insular Government praying for its withdrawal. When the Commissioners retired to their hill-station at Báguio (Benguet) they were followed up by protests against the measure, but it became law under Philippine Commission Act No. 1189. Since the imposition of this tax there has been a general complaint throughout the civilized provinces of depression in the internal trade, but to what extent it is justified there is no available precise data on which to form an estimate.

As already stated, the American occupation brought about a rapid rise in the price of everything, not of necessity or in obedience to the law of supply and demand, but because it was the pleasure of the Americans voluntarily to enhance established values. To the surprise of the Filipinos, the new-comers preferred to pay wages at hitherto unheard-of rates, whilst the soldiers lavishly paid in gold for silver-peso value (say, at least, double), of their own volition—an innovation in which the obliging native complacently acquiesced, until it dawned upon him that he might demand anything he chose. The soldiers so frequently threw away copper coin given them in change as valueless, that many natives discontinued to offer it. It followed that everybody was reluctantly compelled to pay the higher price which the American spontaneously elected to give. Labour, food, house-rent, and all the necessaries of life rose enormously.[1] The Colony soon became converted from a cheap into an expensive place of residence. Living there to-day costs at least three times what it did in Spanish times. Urban property and lands were assessed at values far beyond those at which the owners truly estimated them. Up to 1904 it was not at all uncommon to find the rent of a house raised to five times that of 1898. Retailers had to raise their prices; trading-firms were obliged to increase their clerks' emoluments, and in every direction revenue and expenditure thenceforth ranged on an enhanced scale. It is remarkable that, whilst pains were taken by the new-comers to force up prices, many of them were simultaneously complaining of expensive living! Governor W. H. Taft, with an annual emolument of $20,000 gold, declared before the United States Senate that the Gov.-General's palace at Malacañan was too expensive a place for him to reside in. The lighting of the establishment cost him $125 gold a month, and his servants' wages amounted to $250 monthly. He added that he would rather pay his own rent than meet the expenses of the Malacañan residence.[2]

Two and a half years later General Leonard Wood reported:

[1] "Ever since the occupation of these Islands by the American army, four years "ago, the price of labour has steadily increased. . . . It is needless to say that "every industry will be profoundly affected by this." *Vide* Notes in "Monthly Summary of Commerce of the Philippine Islands," May, 1903. Prepared in the Bureau of Insular Affairs, War Department, Washington.

[2] *Vide* statement of Governor W. H. Taft before the U.S. Senate, January 31, 1902, in Senate Document No. 331, Part I., 57th Congress, 1st Session, p. 258.

There has been a great increase in the cost of living and in wages in "this (Moro) as in other provinces—an increase which has not been "accompanied either by improved methods or increased production. "The cause of the increase can be traced, in most cases, to the *foolishly* "*high prices paid* by army officials for labour."[1]

Wages steadily advanced as a natural consequence of the higher cost of living, and, under the guidance of a native demagogue, the working classes, for the first time in Philippine history, collectively began to grumble at the idea of labour-pay having a limit. It was one of the abuses of that liberty of speech suddenly acquired under the new dominion. On February 2, 1902, this person organized the malcontents under the title of a "Labour Union," of which he became the first president. The subscription was 20 cents of a peso per week. The legality of peacefully relinquishing work when the worker felt so inclined was not impugned; but when the strikers sought to coerce violently their fellow-men, the law justly interfered and imprisoned their leader. The presidency of the so-called "Labour Union" was thenceforth (September following) carried on by a half-caste, gifted with great power of organization and fluent oratory. He prepared the by-laws of the association, and fixed the monthly subscription at one peso per man and one peseta (one-fifth of a peso) per woman. About 100,000 members were enrolled in the union, the ostensible aim of which was the defence of the working man's interests. It is difficult to discern what those interests were which needed protection; the position of the labouring class was the very reverse of that existing in Europe; the demand for labourers, at any reasonable wage, exceeded the supply. The idea of a Filipino philanthropically devoting his life to the welfare of the masses was beyond the conception of all who understood the Philippine character. At the end of about eight months, notwithstanding the enormous assets from subscriptions, the "Labour Union" became insolvent, with a deficit of 1,000 or more pesos. Where the assets had gone needed investigation. In the meantime the leader, posing as mediator between the Insular Government and certain notorious outlaws, had endeavoured to negotiate with Governor W. H. Taft for their surrender, on the condition of full pardon. The Government, at length, becoming suspicious of his intentions and the full measure of his sympathy for these individuals, caused the leader to be arrested on May 29, 1903, on the allegations of "founding, directing, and presiding over an illegal association known "as 'The Democratic Labour Union,'" irregularities connected with the foundation and administration of the same, sedition, confederacy with brigands, and other minor counts.

It was clear to every thinking man, American or European, that the control of such a formidable body was a menace to peace. The accused was brought to trial on the chief allegations, and in September, 1903, he

[1] *Vide* Report of the Moro Province for the fiscal year ending June 30, 1904, p. 27.

was sentenced to four years and two months' imprisonment, but appealed against the sentence to the Supreme Court. Later on he was tried on the other counts, and, although the public prosecution failed, it served the useful purpose of dissolving a league the scope of which was shrouded in obscurity, at a period when the political atmosphere was still clouded by aspirations of impossible and undesirable realization. I followed the course of the trial daily, and I interviewed the accused at his house a week before it ended. Three hundred documents were read at the trial, and 160 witnesses were brought against him. To endeavour to establish a case of conspiracy against him, another individual was produced as his colleague. The first accused was defended by an American advocate with such fervid eloquence, apparently inspired by earnest conviction of his client's innocence, that those who had to decide his fate acquitted him of the charge of conspiracy on May 11, 1904. The defendant's verbal explanation to me of the "Labour Union" led me to the conclusion that its abolition would benefit the community.

The abnormal rise in wages had the bad effect of inducing the natives to leave their pastoral pursuits to flock into the towns. The labour question is still a difficult problem, for it is the habit of the Filipino to discontinue work when he has a surplus in his pocket. Private employers complain of scarcity and the unreliability of the unskilled labourer. Undoubtedly the majority of them would welcome the return of Chinese coolies, whose entry into the Islands is prohibited by the Insular Government, in agreement with the desire of the Filipinos, who know full well that the industrious Chinaman would lower wages and force the Filipinos into activity for an existence.

Consul-General Wildman, of Hong-Kong, in his report for 1900 to the State Department, Washington, said: "There has been, during the "past year, quite an investment of Hong-Kong capital in Manila; but "it is the general opinion that *no investment in mines or agriculture* in "the Islands *will be of any great value until the introduction of Chinese* "*labour* is not only *permitted* but *encouraged*."

Section IV. of the Chinese Exclusion Act of 1902 provides that every Chinese labourer rightfully in any insular territory of the United States (Hawaii excepted), at the time of the passage of this Act, shall obtain, within one year thereafter, a certificate of residence, and upon failure to obtain such certificate he shall be deported; and the Philippine Commission is authorized and required to make all regulations necessary for the enforcement of this section in the Philippine Islands. No restriction is placed upon their movement from one island to another of the Philippines, but they cannot go from the Philippines to America.

The regulations established by the Insular Government (Act of March 27, 1903) in conformity with the above-cited Act are as follows: The Chinese can leave the Islands and return thereto within a year. They must obtain a certificate of departure and be photographed. To re-enter the Islands they must procure a certificate of departure at the place of embarkation (usually China) for the Philippines. Thus, during the year ending June 30, 1902, 10,158 Chinese entered Manila, and 11,432 left it with return certificates. Chinese resident in the Islands must be registered. The first banishment for contravention of this regulation took place on January 6, 1905.

For a long time there was a big contraband business done in Chinese. A coolie would pay as much as 400 pesos premium to find himself where he could earn up to 100 pesos per month. The contraband agent in China was an ex-Custom-house officer. The Manila agent was in the Customs service, and the colleagues on the China side were high officials. When the conspiracy was discovered the agent in China came to Manila to answer the charge, and was at once arrested. A prosecution was entered upon; but after a protracted trial, the proceedings were quashed, for reasons which need not be discussed. The Exclusion Act is so rigidly upheld that in the case of a Chinese merchant who died in the Islands leaving a fortune of about 200,000 pesos, his (Chinese) executor was refused permission to reside temporarily in the Colony for the sole purpose of winding up the deceased's affairs.

The social position of the Chinese permitted to remain in the Islands has changed since the American advent. In former times, when the highest authorities frowned upon the Chinese community, it was necessary to propitiate them with bags of silver pesos. There was no Chinese consul in those days; but Chino Cárlos Palanca was practically the protector and dictator of his countrymen during the last decade of Spanish rule, and, if a cloud descended upon them from high quarters, he used to pass the word round for a dollar levy to dissipate it. In February, 1900, Chino Palanca was made a mandarin of the first class, and when his spirit passed away to the abode of his ancestors his body was followed to interment by an immense sympathetic crowd of Celestials. This pompous funeral was one of the great social events of the year. Now there is a Chinese consul in Manila whose relations to his people are very different from those between Europeans and their consuls. The Chinese consul paternally tells his countrymen what they are to do, and they do it with filial submission. He has given them to understand that they occupy a higher position than that formerly accorded to the Chinese in this Colony (*vide* Chinese, Chapter viii).

On my first visit to Manila after the American occupation I was struck to see Chinese in the streets wearing the pigtail down their backs, and dressed in nicely-cut semi-European patrol-jacket costumes of cloth or washing-stuffs, with straw or felt "trilby" hats. Now, too, they mix freely among the whites in public places with an air of social equality, and occupy stall seats in the theatre, which they would not have dared to enter in pre-American times. The Chinese Chamber of Commerce is also of recent foundation, and its status is so far recognized by the Americans that it was invited to express an opinion on the Internal Revenue Bill, already referred to, before it became law. The number of Chinese in the whole Archipelago is estimated at about 41,000. When an enterprising American introduced a large number of jinrikishas, intending to establish that well-known system of locomotion here, the Chinese Consulate very shortly put its veto on the employment of Chinese runners. The few natives who ran them became objects of ridicule. The first person who used a jinrikisha in Manila, with Chinese in livery, was a European consul. Other whites, unaccustomed to these vehicles, took to beating the runners—a thing never seen or heard of in Japan or in colonies where they are used in thousands. The natural result was that the 'rikisha man bolted and the 'rikisha tilted backwards, to the discomfort of the fool riding in it. The attempted innovation failed, and the vehicles were sent out of the Colony.

Apart from the labour question, if the Chinese were allowed a free entry they would perpetuate the smartest pure Oriental mixed class in the Islands. On the other hand, if their exclusion should remain in force beyond the present generation it will have a marked adverse effect on the activity of the people (*vide* pp. 182, 411).

At the period of the American occupation the *Currency* of the Islands was the Mexican and Spanish-Philippine peso, of a value constantly fluctuating between 49 and 37 cents. gold (*vide* table at p. 647). The shifty character of the silver basis created such an uncertainty in trade and investment transactions that the Government resolved to place the currency on a gold standard. Between January 1 and October 5, 1902, the Insular Treasury lost $956,750.37½ from the fall of silver. A difficulty to be confronted was the impossibility of ascertaining even the approximate total amount of silver current in the Islands. Opinions varied from P.30,000,000 upwards.[1] Pending the solution of the money problem, ineffectual attempts were made to fix the relative values by the publication of an official ratio between gold dollar and silver peso once a quarter ; but as it never agreed with the commercial quotation many days running, the announcement of the official ratio was altered to once in ten days. Seeing that ten days or more elapsed before the current ratio could be communicated to certain remote points, the complications in the official accounts were most embarrassing. Congress Act of July 1, 1902, authorized the coinage of subsidiary silver, but did not determine the unit of value or provide for the issue of either coin or paper money to take the place of the Mexican and Spanish-Philippine pesos in circulation, so that it was quite inoperative. Finally, Congress Act of March 2, 1903, provided that the new standard should be a peso equal in value to half a United States gold dollar. The maximum amount authorized to be coined was

[1] In the years 1888-97 the circulation of Mexican and Spanish-Philippine dollars (pesos) was computed at about 36,000,000.

75,000,000 silver pesos, each containing 416 grains of silver, nine-tenths fine. The peso was to be legal tender for all debts, public and private, in the Islands, and was to be issued when the Insular Government should have 500,000 pesos ready for circulation. The peso is officially alluded to as "Philippine currency," whilst the popular term, "Conant," derives its name from a gentleman, Mr. Charles Conant, in whose report, dated November 25, 1901, this coin was suggested. He visited the Islands, immortalized his name, and modestly retired.

The "Philippine currency," or "peso Conant," is guaranteed by the United States Treasury to be equal to 50 cents of a gold dollar. The six subsidiary coins are 50, 20, and 10 cents silver, 5 cents nickel, and 1 and ½ cent bronze, equivalent to a sterling value of one shilling to one farthing. This new coinage, designed by a Filipino, was issued to the public at the end of July, 1903. The inaugurating issue consisted of 17,881,650 silver pesos, in pesos and subsidiary coins, to be supplemented thereafter by the re-coinage of the Mexican and Philippine pesos as they found their way into the Treasury. For public convenience, silver certificates, or Treasury Notes, were issued, exchangeable for "Conant" silver pesos, to the extent of 6,000,000 pesos' worth in 10-peso notes; another 6,000,000 pesos in 5-peso notes, and 3,000,000 pesos in 2-peso notes, these last bearing a vignette of the Philippine patriot, the late Dr. José Rizal. On December 23, 1903, the Governor reported that "not till January 1, 1904, can the Mexican coin be demonetized and denied as legal tender value." A proclamation, dated January 28, 1904, was issued by the Insular Treasury in Spanish and Tagálog to the effect (1) that after October 1, 1904, the Government would only accept Mexican or Philippine pesos at the value of their silver contents, and (2) that after December 31, 1904, a tax would be levied on all deposits made at the banks of the above-mentioned coinage. Notwithstanding the publication of numerous official circulars urging the use of the new peso, the Mexican and Spanish-Philippine dollars remained in free circulation during the first six months of 1904, although rent and certain other payments were reckoned in "Conant" and current accounts at banks were kept in the new currency, unless otherwise agreed. Naturally, as long as the seller was willing to accept Mexican for his goods, the buyer was only too pleased to pay in that medium, because if, for instance, he had to pay 10 Mexican dollars, and only had "Conant" in his pocket, he could call at any of the hundred exchange shops about town, change his 10 "Conant" into Mexican at a 5 to 20 per cent. premium, settle his bill, and reserve the premium. Almost any Far Eastern fractional coins served as subsidiary coins to the Mexican or Spanish-Philippine peso, and during nine or ten months there were no less than three currencies in use—namely, United States, Mexican (with Spanish-Philippine), and "Conant." It was not practicable to deny a legal-tender value to so much Mexican and Spanish-

Philippine coin in circulation. The retailer was required to exhibit in his shop a card, supplied by the municipality, indicating the exchange-rate of the day, and declaring in Spanish, English, and Tagálog as follows: "Our prices are in American currency. We accept Philippine currency at the rate of . . ."; but the reckoning in small-value transactions was so bewildering that, in practice, he would accept any coinage the purchaser chose to give him at face value. From August 1, 1904, when the "Internal Revenue Law" (*vide* p. 630) came into operation, merchants' and bankers' accounts and all large transactions were settled on the new-currency basis. Many retailers followed the lead, and the acceptance of the new medium thenceforth greatly increased. Still, for several months, provincial natives were loth to part with their old coin at a discount, or, as they plainly put it, lose 10 to 20 per cent. of their cash capital at a stroke. The Insular Treasurer therefore issued another circular in December, 1904, stating that whosoever engaged in business should make use of the old coinage in trade transactions after December 31, 1904, without special licence, would be condemned to pay not only that licence, but a heavy fine, or be *sent to prison*; and that all written agreements made after October, 1904, involving a payment in old currency, would pay a tax of 1 per cent. per month from the said date of December, 1904. Nevertheless, further pressure had to be exercised by the Civil Governor, who, in a circular dated January 7, 1905, stated that "it is hereby ordered that the Insular Treasurer and "all provincial treasurers in the Philippine Islands shall, on and after "this date and until February 1, 1905, purchase Spanish-Filipino "currency, Mexican currency, Chinese subsidiary silver coins, and all "foreign copper coins now circulating in the Philippine Islands at *one* "*peso*, Philippine currency, for *one peso and twenty centavos*, local "currency."

As late as March, 1905, there was still a considerable amount of old coinage in private hands, but practically the new medium was definitely established. The total number of "Conant" pesos in circulation in the Islands, in the middle of May, 1905, was 29,715,720 (all minted in America), and "Conant" paper, P.10,150,000.

From the time of the American occupation up to May, 1902, the two foreign banks—the Hong-Kong and Shanghai Banking Corporation and the Chartered Bank of India, Australia, and China (*vide* Banks, p. 258)—were the only depositaries for the Insular Treasury, outside the Treasury itself. In the meantime, two important American banks established themselves in the Islands—namely, the "Guaranty Trust Company," and the "International Banking Corporation." On May 15, 1902, the "Guaranty Trust Company" was appointed a depositary for Philippine funds both in Manila and in the United States; and on June 21 following the "International Banking Corporation" was likewise appointed a depositary for the Insular

Treasury, each being under a bond of $2,000,000. These two banks also act as fiscal agents to the United States in the Philippines.[1]

In 1904 the position of the "Banco Español-Filipino" (*vide* p. 258) was officially discussed. This bank, the oldest established in Manila, holds a charter from the Spanish Government, the validity of which was recognized. The Insular Government sought to reduce the amount of its paper currency, which was alleged to be three times the amount of its cash capital. Meanwhile, the notes in circulation, representing the old Philippine medium, ceased to be legal tender, and were exchanged for "Conant" peso-value notes at the current rate of exchange.

For a short period there existed an establishment entitled the "American Bank," which did not prosper and was placed in liquidation on May 18, 1905, by order of the Gov.-General, pursuant to Philippine Commission Act No. 52 as amended by Act No. 556.

In February, 1909, the terms of Article 4 of the Treaty of Paris (*vide* p. 479) will lapse, leaving America a freer hand to determine the commercial future of the Philippines. It remains to be seen whether the "Philippines for the Filipinos" policy, promoted by the first Civil Governor, or the "Equal opportunities for all" doctrine, propounded by the first Gov.-General, will be the one then adopted by America. Present indications point to the former merging into the latter, almost of necessity, if it is desired to encourage American capitalists to invest in the Islands. The advocate of the former policy is the present responsible minister for Philippine affairs, whilst, on this work going to press, the propounder of the latter doctrine has been justly rewarded, for his honest efforts to govern well, with the appointment of first American Ambassador to Japan.

[1] The "International Banking Corporation": Capital paid up, £820,000; reserve fund, £820,000. The "Guaranty Trust Company": Capital, reserves, and undivided profits, about $7,500,000 gold.

Annex 244

Andres M. Mane, "Status, Problems and Prospects of the Philippine Fisheries Industry", *Philippine Farmers Journal*, Vol. 2, No. 4 (1960)

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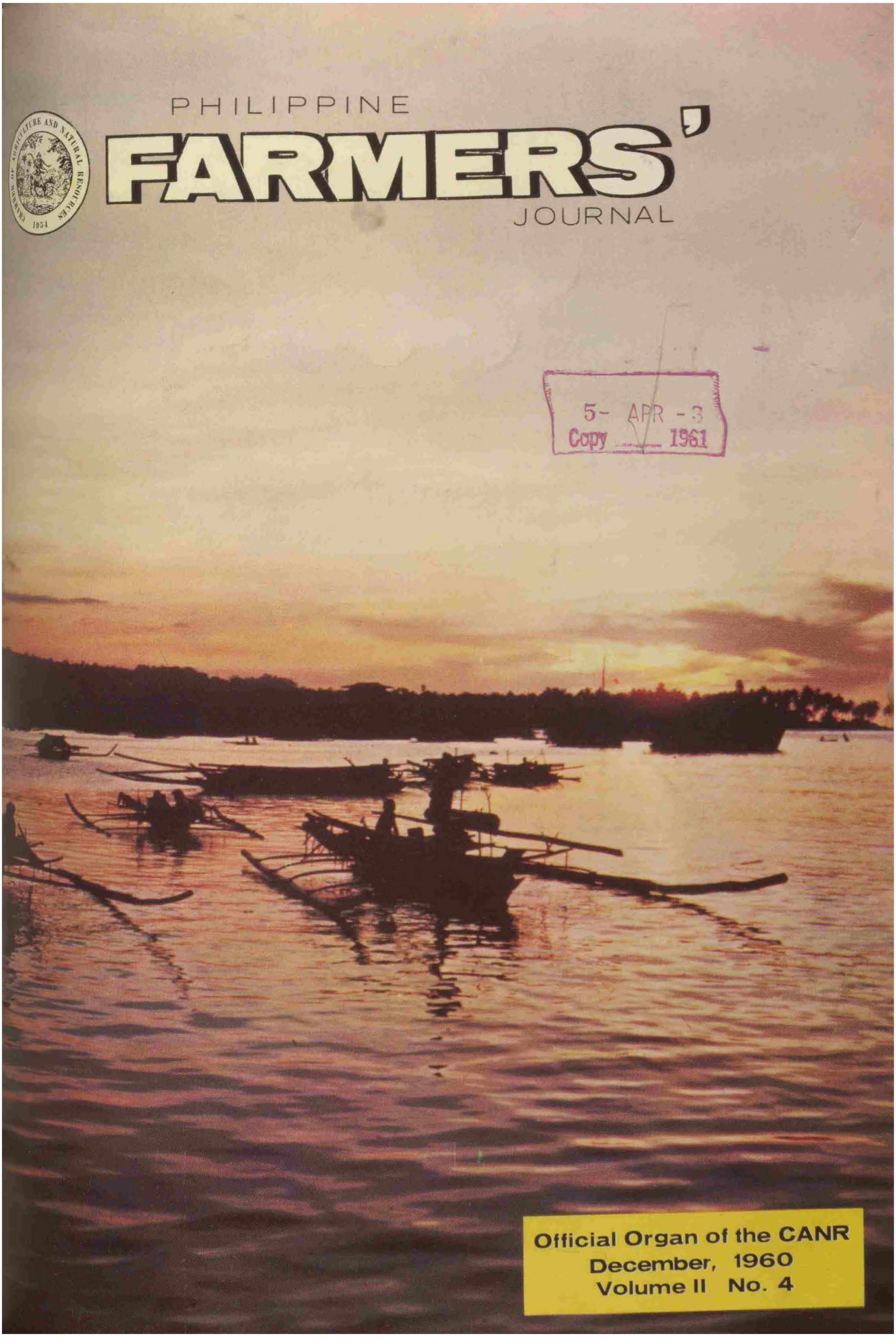

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One of the most vital industries which will condition Philippine economic progress is the fisheries industry. While its development during the last ten years may be considered rapid, with production in 1959 moving up to almost twice that of 1950, yet it can be said that further efforts are needed to boost production levels close to what the country needs. The question is: Can this be done?

In 1959, income realized from fisheries totalled ₱383 million. This amount was 3.9 per cent of total national income and about 10.3 per cent of income originating from agriculture. The rest of the agricultural income, of course, was contributed by crops, livestock, and forestry.

It is estimated that some 600,000 persons are employed directly in fish production. This number excludes those in the secondary and tertiary fisheries industries and people who are drawn from various occupations, principally crop production, carrying on some fisheries activities.

Fish is one of the basic foods of the people. It is considered second only to rice in importance. In fact these two food items go together

PROBLEMS AND PROSPECTS OF LIPPINE FISHERIES INDUSTRY

By
Andres M. Mane*

in their daily diet. Fish is the cheapest source of animal protein. Because of its high digestibility, it is regarded as of high food value.

In recent years, there has been an increasing demand for fish and other aquatic products as a result of the establishment of fish canning plants and the expansion of fish processing establishments. These are prepared into canned fish, fish meal, fish sauce (patis), fish paste (bagoong), and other fish by-products.

Shell and shellcraft products, sponges, corals, fish and fish preparations and other minor aquatic products are items used in export trade. The foreign exchange earnings from these products in 1959 amounted to ₱1.3 million.

Our Fishery Resources

The fisheries resources of the Philippines abound in about 900,000 hectares of fresh water, 500,000 hectares of brackish swamplands and 166,630,000 hectares of marine area. There are about 2,000 species of fish reported from these waters, but only a little more than 100 of them are of economic importance and are caught in commercial quantities. Other aquatic products such as crustaceans, shellfish, helothurians, corals, poriferans and other invertebrate animals are among the products contributing to the fisheries income.

The fresh water resources include those in lakes, rivers, marshes, irrigated rice fields, and artificially built ponds and reservoirs. They consist of a few landlocked fish species such as the catfish (*kanduli* and *hito*), gobies (*biya*), climbing perch (*tinikan*), therapon (*ayugin*) and mudfish (*dalag*); a few migrating fish like the mullets (*banak*, *talilong*), milkfish (*bañgos*), crevalle (*talakitok*); tarpons (*buan-buan*); some exotic fishes such as carp, gourami, plasalit and tilapia; and a few invertebrate species which include shrimps, clams, and snails.

The important fresh water fishing areas are Paoay Lake, Mañgabol Lake, the river systems of Cagayan Valley, Agno River, Pampanga River, Bulacan River, Candaba Swamps in North and Central Luzon; Laguna de Bay, Taal Lake, and Naujan Lake in the southern Tagalog provinces; Lakes Baao, Bato, and Buhi and the Bicol River and marshes in Camarines Sur; Lakes Mainit, Lanao and Buluan and Liguasan Marsh in Mindanao. Many of these fishing areas are already on the verge of depletion, if not as yet depleted, as a result of continued heavy exploitation. In fact, complaints are everywhere heard of the scarcity of fish in them.

At the end of 1959, there were 120,000 hectares of fishponds developed out of the 500,000 hectares of brackish-water swamplands and tidal flats constituting about 24 per cent of total available area. Bañgos (*Chanos-chanos*) is the principal fish being cultured, but other species such as shrimps (*sugpo*), butterfish (*kitang*), etc. that enter with the incoming water in freshening the ponds are among the harvests.

The general marine resources include those in the onshore and offshore waters along a coastline of 17,460 kilometers long and in the territorial water of 1,666,290 square kilometers. The inshore or coastal resources include mostly littoral (non-migratory) and a few se-

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dentary (migratory) species including bañgos fry, siganids (*dangit*), myctophids (*sirom-sirom*) shrimps, crabs, etc.

The offshore resources include demersal (*bottom*) and pelagic (*surface*) species. Trawling for demersal fishes is limited to bays, gulfs, and inland seas in view of the narrow continental shelf (the seat of biological productivity). Among these trawling areas are Lingayen Gulf, Manila Bay, Ragay Gulf, San Miguel Bay, Asid Gulf, Carigara Bay, and the seas off southern Samar, North Panay, and other points of Visayan seas. Intensive trawling is already making deep inroads on the fish stocks of these areas which are already beginning to be felt. Longer time of fishing and use of higher powered boats are now resorted to in order to maintain profitable operations.

The trawl fishing depends on about 30 families of fishes representing about 90 species. Among those that are taken in commercial quantities are species of slipmouths (Leiognathidae), lizard fish (Synodontidae), crevalle (Carangidae), croakers (Scianidae), pomadasids (Pomadasidae) and shrimps (Penaeidae).

Coral reef fishing has, in later years, augmented and bolstered demersal fish catch. The principal reef fishing banks include Stewart Banks, Scarborough Reef, Apo Reef, the reef and shoals around Fortune Island, Lubang Island, Marinduque, Polillo, Ticao, Burias, Masbate, Cuyo, and Busuanga. Among the species exploited are caesios (Scianidae), porgies (Lethrinidae), surgeon fishes (Acanthuridae), groupers (Epniephelidae), snappers (Lutianidae) and caranx (Carangidae).

Fishing for pelagic species takes place on offshore waters off northern Luzon, Lingayen Gulf, Manila Bay, Batangas Bay, Balayan Bay, waters around Mindoro and Palawan including Malampaya Sound, and Dumaran Channel. Alabat Island, Domaguilas Bay, Davao Gulf, Sibuguey Bay, Sulu Sea, Visayan Sea and Celebes Sea. Among the species worked out by the pelagic fisheries are anchovies (Engraulidae), sardines and herrings (Clupeidae), mackerels (Scombridae), tunas and bonitos (Thunnidae), carangoids (Carangidae), etc.

Large occurrences of tuna and tuna-like species have been reported at some distance from the shore by Japanese fishermen. This was confirmed in the exploratory fishing survey of the U.S. Fish and Wildlife Service during the Philippine Fishery Program (1946-1950) under the Philippine Rehabilitation Act (Public Act 370), and the Pacific Fishing Corporation (1952). These surveys showed that the offshore waters and the adjacent high seas of the Philippines are among the best grounds for tuna, particularly the yellow fin species which is demanded in the international markets.

Fish Production

Although some progress has been attained in the production of fish as evidenced by the fact that the pre-war level had been surpassed since 1947 and that fish catch still continues to increase, the fish demand of the fast growing population is still not met. In 1959, for example, the total production was only 436,500 metric tons while the nutritional requirement of the population was 664,000[1] metric tons. The deficiency of 227,500 metric tons or 34.6 per cent was partially filled by importing 47,300 metric tons of fish and other fishery products valued at ₱21.9 million.

The following table shows the production of fish during the last ten years ending 1959:

Table 1. Fish Production by Sources, 1950-1959[2]

(In Metric Tons)

Year	Municipal Fisheries and Sustenance Fishing	Commercial Fishing Vessels	Fishponds	Total
1950	146,793	47,932	25,463	220,189
1951	197,393	69,027	29,669	296,089
1952	208,706	73,315	31,038	313,059
1953	199,266	72,888	33,471	305,626
1954	205,370	103,220	35,034	343,624
1955	218,983	107,210	36,773	362,927
1956	248,509	106,659	38,479	393,648
1957	253,808	93,948	39,413	387,169
1958	257,165	111,876	57,624	426,666
1959	260,573	117,818	58,090	436,481

[1]/ On the basis of new population estimates of the Census and a per capita requirement of 26.97 kilograms a year as reported by the Inter-Agency Committee on Nutrition of the NEC.

[2]/ Source of Data: Bureau of Fisheries.

Annex 245

Daniel George Edward Hall, *A History of Southeast Asia* (1964)

A HISTORY OF
SOUTH-EAST ASIA

BY

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CHAPTER 46

THE JAPANESE IMPACT

WHEN in November 1936 Germany and Japan signed the Anti-Comintern Pact and in July of the following year Japan's second big offensive began in China, another Russo-Japanese war seemed only a matter of time. In the summer of 1938 there was open warfare near the junction of the borders of Manchuria, Korea and Siberia, and a state of severe tension in Soviet-Japanese relations. Both sides were making huge concentrations of troops in Manchuria and Siberia.

Then in September 1938 came the Munich agreement. Its effects upon Japanese policy were immediate. She decided that the weakness displayed by Britain and France in face of the dictators indicated that she could get away with a policy of expansion in South-East Asia. Britain had the largest financial stake in China, and Japan was already heartened by the extent to which her determined advance there had resulted in British measures of appeasement. Her hope, therefore, was that she could achieve her aims without full-scale hostilities. That was why in the spring of 1939 she refused the invitation to join her Anti-Comintern partners in a military pact.

Japan's southwards push began in the very month after Munich, when she seized Canton and isolated Hong Kong from the mainland. This was the prelude to the seizure of strategic points in the South China Sea, Hainan Island off the coast of French Indo-China on 10 February 1939, and the Sinnan Islands, including Spratley, on 30 March. Thus she sought to overcome the serious disadvantage under which she had laboured through having no naval base nearer Singapore than Formosa. Hainan brought her within 1,300 miles of it. Spratley Island took her 700 miles nearer still.

The big danger in the game that she was playing was from the United States, where her actions had already aroused so much apprehension that in the previous January the American fleet had been transferred from the Atlantic to the Pacific. But Germany and Russia signed their Non-Aggression Pact on 21 August, and within a fortnight another great war began in Europe. Japan was worried by the possible implications of the pact; but she calculated that while there

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Contest for the South China Sea

Marwyn S. Samuels

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3

The open sea

The decline of China's merchant and naval fleets during the late fifteenth and early sixteenth centuries was dramatic. In 1420, at the peak of maritime development, the Ming navy consisted of some 3800 vessels, including 1350 patrol ships, 1350 combat vessels attached to particular forts, a main distant-water warship fleet of 400 vessels, 400 grain and equipment transport freighters, and 250 'Treasure Ships' or galleons for the Southern Sea trade. By 1474 the main warship fleet had been reduced by 65 per cent to 140 vessels and the number of ships in all categories sharply declined.[1] In 1500 regulations were promulgated to make it a capital offence to build any new two-masted vessels, a measure calculated to destroy the shipyards near Nanking and elsewhere. In 1525 coastal officials were instructed to destroy all remaining ships of that size and to arrest any sailors working such vessels. Another regulation of 1551 declared that whosoever ventured out to sea in multiple-masted ships (i.e. intending long-distance contact and trade) were thereby guilty of treason.[2] China's 'experiment' with maritime expansion had, indeed, come to an end.

This is not to say that such regulations were strictly enforced, or that the anti-maritime sentiment prevailed without exception. In 1553 a large history of the Nanking shipyards was written and printed, an indication that the maritime spirit was not utterly abandoned.[3] Similarly, by the mid-eighteenth century a revived interest in nautical technology witnessed the compilation of much technical data in new encyclopedias, travel books and shipbuilding manuals. And, as we shall see, Chinese vessels continued to sail the waters of the South China Sea. Yet, for all of this, there can be no doubt that the great period of Chinese maritime exploit came to an end by the late fifteenth century.

Many factors contributed to the rapid decline of China's maritime position. Even as the profits from the tribute-trade system were great, currency devaluation and the export of precious metals threatened the entire domestic economy. The cost of building and maintaining a large navy, especially under inflationary conditions, became increasingly prohibitive. Furthermore, by 1411 the technical problem of water supply for the

Shantung section of the Grand Canal had been overcome, making inland water transport economically more competitive with coastal shipping.[4] Hence, the need for a large coastal freighter fleet together with a coastal defense apparatus was greatly reduced. In addition, the biases of the gentry-based Confucian bureaucracy, already aimed against mercantilism, were given added impetus by the greatly enhanced ambience of consumerism sustained by the growth of foreign trade.

While each of these factors weighed heavily on the decision-making process at Court, other elements were also influential. The fact that the pro-maritime faction in the Ming Court was led by powerful eunuchs, and that many of China's most influential admirals and naval commanders were foreigners or of non-Han origin, contributed in no small measure to the strength of the anti-maritime faction. Similarly, by the mid-fifteenth century security on the continental frontiers in the northwest and northeast had seriously eroded. In 1449–50 Emperor Cheng T'ung led a disastrous campaign against the Mongols and was himself captured.[5] Thereafter attentions were directed toward northern, continental defense at the expense of maritime expansion.

The shift toward a more northern focus of interest had, in fact, begun when the Yung Lo Emperor removed the capital of the Ming from Nanking to Peking. Much as with the Southern Sung shift to Hang-chou, the resiting of the capital entailed a geographical reorientation accompanied by the development of regional and local interests weighted to influence the Court's empire-wide concerns. Place-bred, tutored by eunuchs from the north, and fearful of revived Mongol power on the northern frontiers, the later Ming emperors were perhaps groomed with a bias against further maritime exploits to the south.[6] Continentalism was reinforced by virtue of the northern location of the capital and by the periodic threats to that capital from the continental frontiers.

Early Ch'ing maritime interests

If the later Ming emperors were given to a continentalist bias, their successors, the early Ch'ing emperors, were even more so. Having themselves emerged from the steppe of Southern Manchuria to the conquest of the Ming Empire, the Manchu founders of the Ch'ing state were not much inclined toward maritime expansion. Their goal was more the consolidation of power in China and in the traditional land frontiers than the extension of oceanic rule. Perhaps for that reason, and as part of a larger campaign to confirm their legitimacy as a Chinese dynasty, the Ch'ing emperors from the time of Ch'ien Lung (1736–95) cast their economic philosophy in a fairly austere, neo-Confucian anti-mercantile mold.[7] They were especially noted for their insular views on foreign trade, views that easily paralleled Confucian notions about the corruptive influence of foreign luxuries, merchants and consumerism. Ironically, being themselves

Annex 247

Kenneth R. Hall, *Maritime Trade and State Development in Early Southeast Asia* (1985)

Maritime Trade and State Development in Early Southeast Asia

Kenneth R. Hall

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The China Trade

Who provided passage from Southeast Asia's ports to China and India in the first centuries of the Christian era? Early Chinese records make it clear that Malay ships and seamen based in Southeast Asia, identified by the term *K'un-lun,* sailed the route between Southeast Asia and China.[42] Until the eleventh century no Chinese ships made the voyage on a regular basis, and until the sixth century Persian ships went no farther east than Sri Lanka. There is disagreement, however, on who provided the passage from South Asia to Southeast Asia.

Many Western historians initially thought that Indian seamen in Indian-made ships developed the route. In reiterating this view, one has recently argued that Southeast Asian seamen were not capable of building the great ships making the voyage.[43] Indians duplicated in shipyards along the Indian coast the more advanced Persian ships, and Indian sailors, most of them Buddhists, then sailed the vessels with their international passengers and cargoes to the "Land of Gold." Opposing this position, other historians now believe that it was not Indians but Southeast Asians piloting K'un-lun ships from the Southeast Asian archipelago to India and back who provided this early linkage for international merchants,[44] which would make Southeast Asian seamen responsible for opening the entire sea route from India to China. They point to Western accounts from this age that record voyages by Malay seafarers as far west as the African coast and draw the conclusion that if Malay ships could reach Africa, they could reach India.

When the need for a maritime route increased, these seamen were able to turn their maritime skills to financial gain. Because Western traders at this time were primarily interested in exchanging Western goods for Chinese products, access to the ports of south China was a critical factor that allowed Malay seamen to expand their Western trade. By securing Chinese commodities and transporting them to Southeast Asian and South Asian trade depots, Southeast Asian seamen eliminated the need for Western ships to venture beyond South Asia.

Malay seamen, however, were not only facilitators of international trade; they could be a serious obstacle as well. They had the potential to be shippers or pirates. Chinese records report that "merchant ships of the barbarians" (K'un-lun) were used to transfer Chinese envoys to their destinations in the archipelago, and that these seamen profited equally from the trade and from plundering and killing people.[45] Herein the Malay seamen's duality is fully recognized. The Chinese considered Southeast Asia to be generally unstable politically and a potential threat to the efficient flow of commercial goods into China. The Chinese government in its dealings with Southeast Asian states was not as much interested in having its political legitimacy and dominance recognized—there was no need to annex the southern regions since the Chinese ruling elite was sure that the southern barbarians would eventually become part of the Chinese cultural realm—as it was in establishing commercial goals as the basis of relationships. The Chinese thus looked for a strong, dominant state in the area that would be able to maintain trade and prevent plundering by the sea pirates based in Southeast Asian waters.

The Chinese apparently favored consistency, preferring not to shift alliances from one state to another. They would recognize one state and attempt to maintain a tributary relationship with it. If the state stopped sending envoys to the Chinese court the Chinese would try to reestablish contact with the state before granting official recognition to another. Southeast Asian states in a tributary relationship with China received nothing from the Chinese but recognition of their legitimacy and trading status. Appeals for direct military aid or patronage were generally ignored.[46] Southeast Asian states did capitalize on Chinese recognition, however, to attract trade to their ports. Chinese support bestowed on them a legitimacy that contributed to their rise. Traders who frequented a "legitimate" coastal trading center seem to have been given preferential treatment in their trade with China. The Malay seamen who provided shipping for goods and merchants saw the potential for acquiring great wealth in the China trade and joined forces with the legitimized states. They turned to policing rather than pirating the sea channels and in return for their loyalty shared in the trade-derived prosperity.

So critical was Chinese recognition that any coastal trade depot wishing to prosper sent a tribute mission to the Chinese court. According to one historian's analysis of these political missions, which were dutifully recorded by Chinese scribes, when they were few it meant stability in the area, that is, when one trade depot's authority over the sea lanes was unchallenged.[47] Periods of internal dissension and political turmoil are reflected, on the other hand, by numerous tribute missions, as various coastal commercial centers competed for the preferred status the Chinese could bestow. For example, in the era of Funan's supremacy, Funan ports were officially recognized by the Chinese court and sent few tribute missions. But by the fifth century, when the pattern of trade was shifting from Funan to the Sunda Strait region, numerous tribute missions from the former economic subordinates of Funan appeared at the Chinese court soliciting favorable trade relationships. Funan attempted to regain Chinese favor, sending both tributary missions and trade envoys to the Chinese court, but the Chinese, fully aware of the transition taking place in trading patterns, chose to ignore the Funan initiative and to give official recognition instead to the ports of a southeastern Sumatra state as well as to those of Funan's neighbor, former vassal, and mortal enemy, the Cham state of Lin-yi.

The Impact of Trade on State Development in South India and Southeast Asia

Over the years historians have examined the possible roles of Brahman priests, Kṣatriya warrior-adventurers, or Vaiśya traders from India in spreading Indian civilization along the emerging maritime routes to developing Southeast Asian states. While some have postulated wholesale colonization by Indian exiles,[48] others have maintained that "Indianization" was wholly created by Southeast Asians themselves, by summoning Brahmans to their courts and creating a thin veneer of Indianized customs.[49] Indeed, the historical records provide no evidence of Indian colonies, Indian conquest, or direct Indian control. The adoption of Indic culture appears to have been voluntary on the part of the Southeast Asians, although some segments of a Southeast Asian society may well have had Indian cultural forms imposed upon them by an indigenous elite. Since the process did not merely occur once or twice but on numerous occasions between the third and fourteenth centuries A.D., in riverine coastal centers as well as in hinterland wet-rice plains, questions of who brought the Indian civilization are better refocused to ask how and why Southeast Asians chose to adopt the Indic culture.[50]

In response to these questions of how and why, a comparative examination of expanding international commercial contacts in southern India and Southeast Asia may provide a basis for understanding transitions in Indian Ocean commercial patterns and also contribute to an understanding of early south Indian and Southeast Asian political organization. South India is different from northern India historically and ethnically: the relationship of south India to northern India is in some ways parallel to the relationship of Southeast Asia to northern India—the differences are differences of degree. The historical issues confronting the scholar of early Southeast Asian civilization are similar to those raised by southern Indian civilization. Both areas developed state systems by integrating north Indian Sanskritic ideology with existing cultural forms. Thus by coming to terms with the process of state formation in southern India, whose history is far better documented than that of early Southeast Asia, one may acquire a conceptual perspective that can be tested and applied on a comparative basis to Southeast Asia; that is, the understanding of one in many ways facilitates the better understanding of the other.

The study of south Indian history suggests that while early south

Annex 248

George Bryan Souza, *The Survival of Empire: Portuguese Trade and Society in China and the South China Sea, 1630-1754* (1986)

THE SURVIVAL OF EMPIRE

PORTUGUESE TRADE AND SOCIETY IN CHINA AND THE SOUTH CHINA SEA, 1630–1754

GEORGE BRYAN SOUZA

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of exports from certain sectors of Chinese regional economies. The late Ming economy 'witnessed a quickening in agricultural specialisation and commercialisation, rapid growth in the handicraft industries, a significant expansion in the volume and extent of interregional trade, and the widespread implementation of changes in the system of taxation.'[13] Silver, for example, became the basic form of paying land taxes. It was via maritime trade that silver was imported; the importance of maritime trade, as a consequence, upon the whole Ming economy is being recognised as one, if not the single, most significant factor in late Ming economic expansion.

Portuguese involvement in the maritime trade of China and the South China Sea was dispersed through the Estado da India. Although Portuguese society in China participated in trade in the South China Sea, Macao's early efforts were focused primarily on their trade with Japan, Manila and India. After the establishment of a Portuguese community in China, the Crown and the Church sought to introduce royal government and integrate Catholic religious observances and missionary efforts in the regions. The success or failure of the Estado da India and Macao revolved around these issues of royal government and communal organisation and administration.

THE ESTADO DA INDIA AND MACAO

The Estado da India was not different from other areas of the world in which the Portuguese established themselves, in that, the institutions which were established and which governed this and other overseas Portuguese societies reflected the administrative structure of continental Portugal. The ideology and political culture of these communities was the heritage of the manner in which different social and economic groups organised themselves, defended their economic interests and maintained their social mores and prejudices in sixteenth-century Portugal.

The representatives of the Portuguese Crown gradually implanted a system of royal government in China with the intension of protecting the monarch's interests and concentrated their efforts in three major overlapping bureaucratic areas: administration, finance and justice. A fourth area of interest was centred on the Crown's *Padroado* (patronage) of the missionary activities of the Catholic Church in China and the South China Sea. The Crown's administration in Macao was served first by the *capitão-mor* of the Japan voyage and subsequently by a *capitão-geral*. Crown finances, especially in the 1630s with the increased preoccupation for revenue and regional sources of finance for the prosecution of its war against Holland, became the subject of scrutiny by the administrators of the Japan and Manila voyages who reported to the *vedor da fazenda* (the royal treasurer) and the *Conselho da Fazenda* (the Council of the Royal Treasury) in Goa. The Crown's judicial representative in Macao was the *ouvidor* (judge) who was responsible to the *Relação* (High Court), which was composed of the *ouvidor geral* (superior judge), and the *desembargadors* (high court judges) in Goa.

Annex 249

Mark J. Valencia, "The Spratly Islands: Dangerous ground in the South China Sea", *The Pacific Review*, Vol. 1, No. 4 (1988)

The Spratly Islands: Dangerous Ground in the South China Sea

Mark J. Valencia

The Spratly Islands in the South China Sea have long been known to mariners as the 'Dangerous Ground', because of their numerous shoals. However they also long borne the seeds of international conflict. They are claimed and now occupied in varying degrees by forces of China, Taiwan, Malaysia, the Philippines and Vietnam (Figure 1). Even France has a lingering claim in the area stemming from its colonial administration of Vietnam. On March 14, 1988, the dispute over ownership of the islands (and the resources in their attendant 200 nautical miles Exclusive Economic Zones-EEZs) erupted into violence when Chinese and Vietnamese troops and ships exchanged fire on and near Sinh Ton island.(1) Chinese troops have now reportedly occupied Louisa Reef (Nan Tong Jiao), Cuarteron Reef (Huayang Jiao), Gaven Reef (Nan Xun Jiao), Fiery Cross Reef (Yung Shu Jiao), Kansan Reef, and Gaven and Kennan islands. The Philippines subsequently renewed its claim to part of the island group and expressed concern over the fighting.(2) Then in April, the Malaysian navy seized three Philippine fishing vessels near Rizal Reef and detained their 49-member crew for fishing without a permit.(3)

Why are these islands so important and why have hostilities erupted now? Potential oil resources are one factor. Although little is known of the geology of this region (Figure 2), the irregular shoals, submarine plateaus, and small, intermediate-depth basins are thought to be a foundered mass of continental crust which may contain petroleum.(4)

However, potential oil is but one factor in the disputes.(5) The Spratlys are also considered strategic as bases for sea-lane defence, interdiction, surveillance and possibly for launching of land attacks. The national security interests of Japan, the United States and the Soviet Union are involved. All concerned are aware that Japan used Tai Ping Dao as a submarine base and staging area for its invasion of the Philippines, the then Dutch East Indies and Malaya in the Second World War. The Imperial Navy did succeed in cutting off Allied shipping in the South China Sea.

Major international shipping lanes pass through the South China Sea near the Spratlys and two of the world's great ports—Singapore and Hong Kong—are situated close to its southern and northern approaches. More than 90 per cent of Japan's oil passes through this area. In times of hostilities the United States would have to convoy sea-borne oil headed for Japan and the United States. A 75 per cent interdiction of

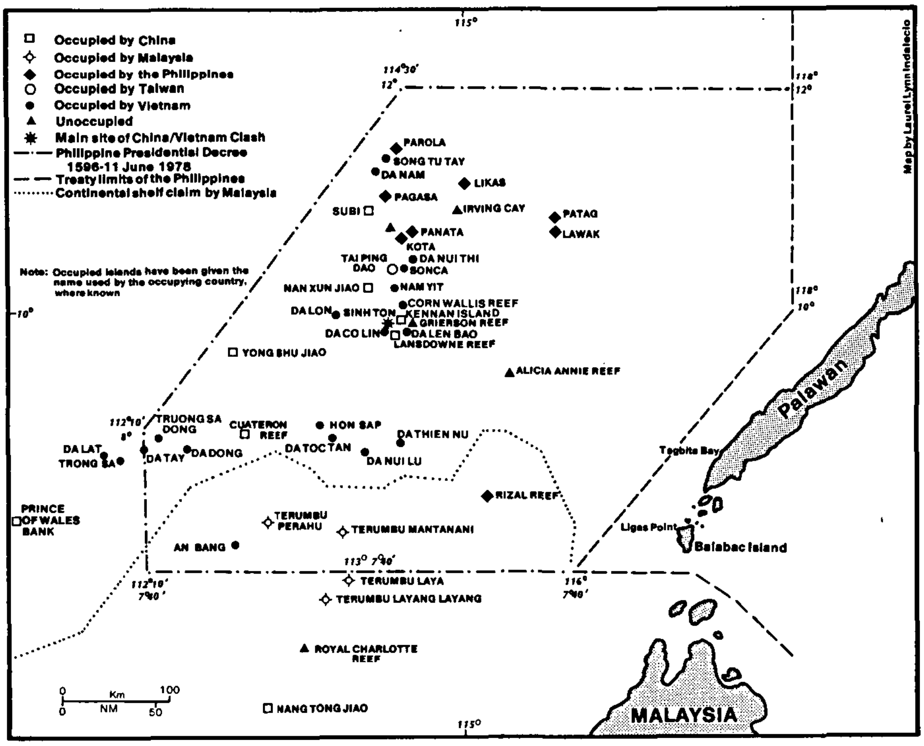

Figure 1. The Spratly Islands: Claims and Occupations (Updated from J. R. V. Prescott, *Maritime Jurisdiction in Southeast Asia: A Commentary and Map*, East-West Environment and Policy Institute Research Report No. 2, 1981; 'Another Spratlys spat', *Asiaweek*, 20 May 1988, pp. 26–27)

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non-oil trade between Southeast Asia and Japan, the United States, and Europe would produce a GNP reduction in Japan of 7 per cent in the third year and a distinct negative impact on every major trading partner. The re-routing of maritime traffic, particularly oil tankers, can be expensive. For example, the diversion of fully-loaded tankers larger than 200,000 deadweight tons to the Lombok-Makassar Straits route would cost shippers about $4150 per trip. For 250,000 dwt tankers at 1973 time-charter hire rates and $70/ton of bunker fuel, diversion from the region to routes outside the 200 nautical miles EEZs could cost $64 million a year and $1.24 billion nondiscounted from 1976 to the year 2000. Scenarios for the future indicate massive increases in flows of energy materials through and from the region. LNG exports from Indonesia, Malaysia and Australia could respectively reach 1 trillion cubic feet (TCF), 0.3 TCF, and 0.8 TCF by 1990. Additional petroleum reserves are likely to be discovered in the Gulf of Thailand, and in the offshore waters of Burma, Vietnam and China.(6)

Potential oil is but one factor in the disputes. The Spratlys are also considered strategic as bases for sea-lane defence, interdiction, surveillance and possibly for launching of land attacks. The national security interests of Japan, the United States and the Soviet Union are involved.

Free navigation through, under and over the straits and sealanes of Southeast Asia is critical to the nuclear strategies of the superpowers. The United States Seventh Fleet, operating out of Subic Bay in the Philippines and Yokosuka in Japan, plies this area on missions and transits between the Pacific and Indian Oceans. Nuclear armed and powered submarines, aircraft carrying nuclear bombs, and nuclear missiles comprise the triad of United States and Soviet nuclear strike capabilities. In order to attack or defend against a nuclear submarine, its location must be known. The United States now has an advantage because Soviet submarines leaving port must pass through the straits of Japan and Korea or between Iceland and Norway and thus can be detected and targeted. Indeed, the United States maintains that the invulnerability of SSBNs (the Poseidon/Trident fleet) and hence their indispensable role in a second-strike depends on their ability to pass through straits and sea-lanes submerged, unannounced and undetected. Four of 16 strategic straits in the world which are important to the mobility of the United States submarine fleet to reach target areas are in Southeast Asia—Malacca, Lombok, Sunda and Ombai-Wetar. The islands could be used as bases for surveillance, monitoring and interdictions of submarine passage. Without secure submerged passage, the submarines would have to circumnavigate Australia.(7)

The Soviet navy also transits the area on its way to the Indian Ocean and uses Cam Ranh Bay as a port of call and forward deployment area. The Soviets need the sea-lanes for imports and exports from its European sector to and from Siberia, especially in wartime. A 1982 Soviet espionage attempt in Indonesia and Malaysia was directed at information about the waters and maritime traffic lanes around the Natuna Islands and the Strait of Malacca, respectively.(8) The outcome of the dispute over the Spratlys is also of particular interest to the Soviet Union both as an ally of Vietnam and as an enemy of China, since the controller of the islands could control the major sea-lines of communication.

The Claimants' Perspectives

Vietnam believes that China is scheming to 'seize sole control of the South China Sea, dominate this international lifeline, replace the United States navy in the region, hinder the Soviet navy's navigation, apply political pressure on the Southeast Asian countries, build a military springboard in the region, seize territory, and exploit and plunder maritime resources'. Vietnam sees China's interest in the Spratlys as being part of a three-pronged strategy aimed at weakening and ultimately annexing Vietnam. (The three prongs are Thailand, the Sino-Vietnamese border, and the South China Sea.)

Vietnam's enmity with China stems from Beijing's backing of the Khmer Rouge against Vietnam. As Hanoi increasingly turned to Moscow for support, the Sino-Vietnamese conflict became part of the larger Sino-Soviet confrontation. In turn, the dispute between Hanoi and Beijing in the South China Sea is an example of these larger problems.

With pressure from the north and west, Vietnam should be anxious to avoid aggravating its new immediate marine neighbours in ASEAN to the south and east—Malaysia, Indonesia, and the Philippines. Indeed, Vietnamese Foreign Ministry officials have been briefing 'friendly countries bordering the Eastern Sea' to explain their position. This presumably includes Malaysia and the Philippines.(9) However, Vietnam's past posture on the Spratlys dispute *vis-à-vis* ASEAN has seemed to vary with ASEAN's stance on the Kampuchean question.

Vietnam has stationed garrisons at about 21 locations in the Spratly group—including five islands, Truong Sa, Song Tu Tay, Sinh Ton, Nam Yit, and An Bang—but has consistently voiced its intention to maintain its sovereignty over the entire Spratly archipelago. Vietnam's main garrison, Song Tu Tay, is about 25 nautical miles northwest of the Philippines' main garrison at Pagasa, and is fortified with heavy coastal artillery and anti-aircraft guns. It has been suggested, although not confirmed, that the island contains a Soviet-built airstrip. Vietnam has used violence before in these islands. Vietnam has a small airstrip on Truong Sa (Spratly Island). In 1976, Vietnamese guns fired at Philippine aircraft as they flew near Song Tu Tay. On June 20, 1979, Vietnamese soldiers, using heavy arms such as mortars, 'mowed down' 85 Vietnamese refugees whose boat had blundered onto one of Vietnam's garrisoned islands. Vietnamese troops also have amphibious tanks. Hanoi is supposed to have ordered refits of warships—including two Soviet Petya II class frigates—to be speeded up to meet any escalation of the dispute. The Vietnamese navy has a total of seven frigates and about 50 coastal attack craft, compared with the Chinese naval strength in the region of 25 submarines, five destroyers and 200 coastal attack craft.(10)

China considers possession of the islands to be a means of countering the growing Soviet presence in the area as well as of monitoring Soviet naval movements. However, China faces a dilemma in enforcing its island claims. Negotiations with Taiwan would raise other sensitive issues and although China is engaged in lingering conflicts with Vietnam, the hostile moves against Vietnamese claims and troops in the Spratlys could be construed as acts against the other claimants as well. China is already nearly encircled by the Soviet Union and its allies, and it would not be in its interests to estrange a group of nations in which Japan, the Soviet Union, and the United States are also keenly interested. If China carries out further military initiatives in the Spratlys, it could set back the thawing of diplomatic relations with Indonesia. During the recent clashes, Chinese officials assured the Philippines that China

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Anthony James Gregor, *In the Shadow of Giants: The Major Powers and the Security of Southeast Asia* (1989)

IN THE SHADOW OF GIANTS

The Major Powers and the Security of Southeast Asia

A. JAMES GREGOR

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state" or anyone who attempts to "overthrow, destroy, or undermine the power of the state or the authority of the lawful government or the machinery of the state" or who seeks to "disseminate feelings of hostility or arouse hostility, cause splits, conflicts, chaos, disturbances, or anxiety among the population." The authorities can employ such powers against anyone "who encourages such activities" or undertakes to "engage in an endeavor that conflicts with the interests of the state."

Similar special powers have been employed by almost every state in the region. The Republic of the Philippines remained under martial law regulations from September 1972 until January 1981. Since that time both Marcos and Aquino, as leaders of the republic, have resorted to a wide range of special powers regarding arrest, detention, and legislative prerogatives.

For more than twenty years Singapore has employed the provisions of the Internal Security Act of 1961 to detain without trial political prisoners deemed threatening to the state. Some prisoners have been held for as long as eighteen years under its provisions. Under Section 8(1)(a) of the act, the president may have persons detained if they are believed disposed to act "in any manner prejudicial to the security of Singapore or any part thereof or to the maintenance of public order or essential services therein."

Thailand has periodically lapsed into martial law and currently employs the special powers of the Anti-Communist Activities Act to control the organization, mobilization, and combat capabilities of the subversive and revolutionary elements within its borders. Like most of the countries in the region, Thailand has introduced special legislation to contain the centrifugal forces of retarded industrial development; ethnic, social, and religious conflict; and territorial dispute. Faced with internal problems of oppressive magnitude, the nations of Southeast Asia have resorted to authoritarian political instrumentalities and utilized special or emergency powers to arrest social strife and organized subversion but insist that representative democracy, with all its attendant civil and political rights, will be restored once the emergencies subside. The emergencies that have invoked special powers, however, have persisted in Southeast Asia for more than four decades and will most likely persist throughout the region for the foreseeable future.

The Strategic Situation

The seas and oceans are central to the history of Southeast Asia, providing the major channels through which the trade and culture contacts of the ancient and modern world influence the development and the complexity of the region. Via sea-lanes the bulk of trade and traders penetrated Southeast

Asia; India, China, and Europe, in both ancient and modern times, reached Southeast Asia largely by sea.

In the West Pacific the sea-lanes through Southeast Asia are critical passages for both axes of traffic: north and south from the Arab Middle East to Japan, Taiwan, and South Korea and east and west from the United States to that same Middle East. Along the north-south axis Japan imports critical supplies, with petroleum about half the incoming cargo and iron and coal about 30 percent. More than half this tonnage comes from beyond the narrow waterways of Southeast Asia; 80 percent of Japan's oil comes from the Persian Gulf. Both the Republic of Korea and the Republic of China on Taiwan are similarly circumstanced. All three export-oriented nations are resource-dependent and import the bulk of their oil from the Arab Middle East through the narrow straits in Southeast Asia.

The four major sea passages—located at the center of both the north-south and the east-west axes of the sea-lanes of communication in Southeast Asia—are the Strait of Malacca, between continental Malaysia and Indonesia, with a prevailing depth of 75 feet and a minimum width of eight nautical miles (NM); the Sunda Strait within Indonesian territorial waters, with a governing depth of 120 feet and a minimum width of twelve NM; the Lombok Strait, with a depth of 600 feet and a width of eleven NM; and the Ombai Strait between Indonesia and Timor, with a depth of 600 feet and a width of twelve NM. All these waterways involve transit through constricted archipelagic waters where passage might be easily interdicted or controlled.[12]

For peacetime shipping, any obstruction to passage in these Southeast Asian straits would mean diverting to other routes, which would do little more than marginally increase the market costs of commodities. In a conflict situation, however, any interdiction of traffic would entail not only increased, and perhaps disabling, response time to crises but would impair the survival capacity of the economies of Japan, South Korea, and Taiwan. Neither Japan, South Korea, nor Taiwan have adequate reserves of oil or raw materials to endure a long interdiction of shipping. In a real combat situation, diverting tankers and bulkcarriers around the choke points in the Indonesian archipelago would significantly delay resupply and perhaps fatally impair a resource-dependent nation's capacity to resist.

Any reactive deployment of U.S. naval forces would be seriously impaired if the critical waterways of Southeast Asia were closed. Timely deployments are essential to naval combatants, particularly when naval resources are limited and unforeseen developments may occur throughout the Persian Gulf and the Indian Ocean as well as in the West and South Pacific. The relatively scant resources of the present United States Navy require that its combatants and support vessels make ready transit from the Pacific to the Indian Ocean to deter Soviet misadventure or respond to local crises.

For Japan, the Republic of Korea, and the Republic of China on Taiwan, unrestricted transit through the choke points in Southeast Asia is essential to policy independence and a credible defense posture. Free passage along the north-south axis of the sea-lanes of communication allows the noncommunist nations of Northeast Asia to pursue their interests without external constraint, whereas any power that has the capacity to interdict that passage could significantly influence the policy deliberations of the resource-dependent nations. This was evident during the oil boycott in late 1973, when the Arab nations forced Japan to alter its policy toward Israel by threatening to halt oil shipments. Any interdiction of passage along the north-south axis of the Southeast Asian trade routes would have essentially the same effect, and any power that controlled the flow of traffic along this axis could substantially influence policy deliberations in Tokyo, Seoul, and Taipei.

For the United States, rapid response times from the Pacific to the Indian Ocean and back are necessary to defend its island territories in the Pacific and to replenish the austere resources of Diego Garcia in the Indian Ocean in times of crisis. To maintain its deterrent capabilities in the Indian Ocean, the United States requires ready transit through the maritime choke points of the Indonesian archipelago. Without this assurance, efforts of the air and naval forces of the United States to counter hostile initiatives in the region would be handicapped. As a maritime power the United States could not influence military events in both the Indian Ocean and the western Pacific at the same time but would have to surrender strategic and political influence over some of the littoral states, including those of the Indian subcontinent and the island nations south of the Korean peninsula.[13]

Also, Southeast Asia's land ridge could allow any dominant land power to control its critical waterways. For the time being, however, the region is composed of a large number of relatively weak states whose governments must balance external pressures while attempting to control internal instability. Although the Soviet Union, the United States, and the People's Republic of China (PRC) have managed to penetrate the area, no one major power has succeeded in obtaining dominant influence. The Soviet Union exercises considerable influence in Indochina, the PRC provides direct military support for guerrillas in Cambodia and Laos and has succeeded in establishing connections with Thailand, and the United States retains military ties with Thailand and the Philippines. None of the major powers, however, has managed to control the security environment.

For the Soviet Union the region has particular significance. Moscow has a considerable investment in the transportation of military cargoes by sea in support of the Socialist Republic of Vietnam and its client states. Beyond that, the Soviet interest in the movement of military supplies by sea extends over the entire length of the sea-lanes in the area. Not only does the USSR anticipate the supply of its client states in Indochina, but in times of conflict Moscow would have to be prepared to support its armed forces in Northeast Asia by sea. In crisis circumstances neither the Trans-Siberian Railroad nor the Baikal-Amur Mainline Railway would be sufficiently secure to guarantee adequate logistic support for the Soviet Far Eastern front. Much of the track of the Baikal-Amur Mainline Railway traverses miles of unstable and fragile permafrost, and displacement of the railroad bed by seismic disturbance is a regularity. As a consequence, Soviet military planners recognize the importance of resupply by sea to the Far Eastern front from the European regions of the USSR.

The sea-lanes thus employed by the USSR involve passage through constricted choke points and cluttered archipelagic waters in Southeast Asia that are vulnerable to attack by submarine, assault from shore installations, and obstruction by mine fields. Any effort to avoid these high-risk areas would necessitate increased transit time for Soviet vessels, obstruct Moscow's connections with its clients in the region, and conceivably undermine the military capabilities of Soviet ground and air forces in Northeast Asia.

The South China Sea—north and northeast of the archipelagic passages—affords the shortest route between the Indian Ocean and Northeast Asia. The South China Sea is about four-fifths the size of the Mediterranean, and as in the Mediterranean the United States and the USSR support opposing sides. Washington identifies with the posture of ASEAN against the Vietnamese invasion of Cambodia and the establishment of a local client regime. The Soviet Union not only supports the position assumed by Hanoi but underwrites Vietnamese efforts at the cost of about $5 million a day.

The U.S. military position is sustained by a substantial naval force operating out of Subic Bay in the Philippines—the largest U.S. naval base outside the United States proper. The Soviet Union, in turn, has acquired as-needed access to naval and air facilities in Vietnam.

The People's Republic of China (PRC) could hardly remain indifferent to a region that Beijing has long considered within its sphere of influence. As the blue-water capabilities of the PRC navy increase, Beijing will likely attempt to influence developments throughout Southeast Asia. The PRC appears to have begun to develop the capability that could close the Yellow and East China seas to hostile traffic but has not yet begun to achieve the ability to seal the South China Sea against potential adversaries.

For the time being, the PRC remains essentially a land power and the only major power with direct land access to Southeast Asia. Moreover, the presence of a substantial ethnic Chinese population in Thailand, Malaysia, Singapore, and Indonesia affords Beijing special access. The PRC's deep involvement in the insurrectionary activities of the regional communist parties throughout the 1960s and 1970s suggests that Beijing enjoys a "comparative advantage" in Southeast Asia not available to Washington or Moscow.

The Soviet Union is the most dynamic actor, for Soviet geopolitical and strategic interests in Southeast Asia increased dramatically with the withdrawal of U.S. land forces. The Treaty of Friendship and Cooperation, signed by Hanoi and Moscow in November 1978, established an intimate relationship between Vietnam and the USSR. The treaty's appended protocols give the Soviet Union port privileges in Vietnamese bases and landing rights for Soviet reconnaissance aircraft flying surveillance from the Soviet Far East to Southeast Asia.[14] Soviet intelligence missions, originally short flights over the East China Sea, have become regular features of the airspace of the South China Sea.

Vladivostok serves as the northern base for a Soviet flotilla that periodically utilizes Vietnamese ports. Soviet naval units, which shadow U.S. naval forces deployed in the Indian Ocean, obtain replenishment and repair in those Southeast Asian ports, making evident the Soviet Union's long-term interests in maintaining a military presence in Southeast Asia. Displaying far more determination than had been anticipated by analysts in the West, the Soviet Union has moved into the region to fill the gaps created by the withdrawal of the British from "east of Suez" and by the retrenchment of the U.S. position in the West Pacific after the debacle in Vietnam.

Within this developing constellation of forces the nations of Southeast Asia have attempted to forge regional associations that might provide some measure of collective strength. Since 1945 the entire region has been characterized by tensions; the reactive responses to those tensions are designed to establish intraregional support, integration, and cooperation.

The Development of Regional Associations

In the years immediately following the end of World War II, Southeast Asia revealed itself as an unstable "shatter-belt." Each nation that attained sovereign independence quickly evidenced some intrinsic fragility. Many hosted irregular military forces within their borders that had been organized to resist the Japanese invaders or that had somehow acquired weapons in the course of the Pacific conflict. After the end of the war those forces and those weapons were often put to the service of local ethnic or religious communities that resisted the authority of the central government of the newly independent states.

In some cases independence in Southeast Asia was purchased after protracted conflict with the metropolis. Vietnam and Indonesia engaged their former colonial masters in armed struggle to secure national independence.

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PREFACE

History is generally defined as a record of events affecting a nation's life and destiny. Unlike fiction (poetry and novel) which is conceived by human imagination or fantasy, history is written based on actual happenings or facts as these are revealed through sources. According to noted historian and Sorbonne professor Dr. Charles Seignobes (1854-1942), these sources are (1) oral tradition, (2) archaeological artifacts, and (3) written literature. Thus, the writing of history, in the perceptive opinion of Lord Macaulay (1800-1859), eminent British historian-statesman, is "one of the most taxing intellectual pursuits of man."

The role played by historical sources in the writing of history is of prime importance. The famous German historian, Professor Leopold von Ranke (1795-1886), in one of his lectures at the University of Berlin in 1837, urged his students to take more interest in historical sources as "the wellsprings of historiography."

Before World War II and the Japanese occupation of the Philippines, our country enjoyed a great abundance of Filipiniana historical sources which delighted local and foreign scholars and booklovers. The National Library in Manila, under the directorships of Dr. T.H. Pardo de Tavera (1857-1925), Epifanio de los Santos (1871-1828), and Don Teodoro M. Kalaw (1884-1940), with its priceless collections of Tabacalera, Pardo de Tavera, Mariano Ponce, Austin Craig, Eduardo de Lete, Manuel Artigas, Clemente J. Zulueta, etc., was reputed to be "richest repository of Filipiniana books and manuscripts in the world."

Aside from the National Library, the monastic archives-libraries of four religious orders — the Augustinians, Franciscans, Dominicans, and Recollects — were located in Intramuros, Walled City of Manila. Moreover, the Dominican University of Santo Tomas, the state-owned University of the Philippines, the Mauro Garcia and other private collections of Filipino bibliophiles contained many valuable Filipiniana sources.

Document 1

A.D. 982: First Recorded Date in Sino-Philippine Relations

By **Ma Tuan-lin** in his book
titled *Wen Shiann Tung Kuo*
written in 1317-1319

It is the consensus of opinion among historians that Sino-Philippine relations antedated the coming of European colonizers in the Asian world. As evidenced by old Chinese records and the artifacts excavated by archaeologists in various parts of our archipelago, Chinese overseas merchants traded with our people during the misty centuries before Magellan's arrival in 1521. Some scholars surmise that Sino-Philippine intercourse began as early as the period of the Chou dynasty (1122-247 B.C.).[1] Others claim it started in the 3rd century A.D. [2] Still others speculate that it occurred during the T'ang dynasty (A.D. 618-907).[3] All these allegations are conjectural. The date A.D. 982 is recorded as the beginning of Sino-Philippine contact by Ma Tuan-lin[4] in his book entitled *Wen Shiann Tung Kuo (A General Investigation of the*

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[1]R. K. Douglas, *Europe and the Far East* (Cambridge, 1904), p. 92. See also Austin Craig, *A Thousand Years of Philippine History Before the Coming of the Spaniards* (Manila, 1914), pp. 1-2.

[2]The *San Kuo Chi* (History of the Three Kingdoms), written by Chen Shou in A.D. 280 - 290, recounts that in 226 A.D. Emperor Sun Chuan of the Kingdom of Wu (222 - 252) A.D.) ordered two of his officials named Chu Ying and Kang Tai to go to the South Seas. It is said that among the countries they visited was the Philippines. For further details, see Wu Ching-hong, *A Study of References to the Philippines in Chinese Sources from Earliest Times to the Ming Dynasty* (Quezon City, 1959), pp. 32-33.

[3]H. Otley Beyer, "Outline Review of Philippine Archaeology by Islands and Provinces," *Philippine Journal of Science* (Manila, 1947), Vol. LXXVII, Nos. 3 and 4, pp. 223-224, 227, 240, 287, 299, and 354.

[4]Ma Tuan-lin, a son of a high government official, was a noted Chinese scholar and teacher. His greatest work, *Wen Shiann Tung Kuo*, consists of 348 volumes and was published by order of the imperial government. A modern edition was printed in Shanghai in 1935. A famous French sinologist, D'Hervey de St. Denys, translated Ma Tuan-lin's book into French and published it in Paris, 1883, under the title *Ma Touan-lin Ethnographie des Peuples Étrangères à la Chine*. It should be noted that only 25 volumes of Ma Tuan-lin's opus were translated and published by St. Denys.

Chinese Cultural Sources) written in 1317-1319 and published in 1322, and confirmed by the *Sung Shih* (History of the Sung Dynasty) which was published in 1343-1347.[5] Interestingly, Ma Tuan-lin called the Philippines Mo-yi (Ma-i). His account runs as follows:[6]

There were traders of the country of Mo-yi,[7] carrying merchandise to the coast of Canton [for sale] in the seventh year of Tai-ping-shing-kuo [of the Sung dynasty, that is 982 A.D. — Z.].

* * * * *

[5]See *Sung Shih* (History of the Sung Dynasty). Shanghai, 1747, reprint edition. Vol. CDXXXIX, p. 9. According to Wu Ching-hong, this dynastic history of the Sungs was compiled by To To, Chinese scholar, and first published in 1343-1347. A reprint edition was published in Shanghai in 1747.

[6]*Wen Shiann Tung Kuo* (Shanghai reprint edition, 1935), Vol. CCCII, Book II, p. 2606.

[7]This is called Ma-yi or Ma-i by Chua Ju-kua in his work titled *Chu-fan-chi* in 1225.

Document 2

Chu-fan-chi (1225)

By Chau Ju-Kua

The first detailed account of the Sino-Philippine trade is recorded by Chau Ju-Kua in his geographical work titled *Chu-fan-chi (A Description of Barbarous Peoples)*, written in 1225. The author was a descendant of Emperor T'ai-tsu (Chao-K'uang-tin), the founder of the Sung dynasty and Inspector of Foreign Trade in Chuanchou (now Chinkiang), Fukien Province, China, from 1205 to 1258. Because of his position, he was able to acquire valuable information from the returning Chinese traders and travelers of the overseas countries and their peoples. In Chapters 40 and 41 of his work, he describes the Chinese trade with the countries of Ma-i and San-su which have been identified by many scholars to be the Philippines. The first English translation of *Chu-fan-chi* was made by Friedrich Hirth, which he finished in 1889, and later published, with W.W. Rockhill as co-author in 1911 at St. Petersburg (now Leningrad).[1] Other English translations (covering only Sections 40 and 41 which pertain to the Philippines) were written by Paul L. Stangl,[2] Emma Blair and James A. Robertson,[3] and Wu Ching-ho.[4] It is interesting to note that Ferdinand Blumentritt, Austrian scholar and Dr. Rizal's best friend, made the first Spanish translation of Chau Ju-kua's opus, and this was first published in *La Solidaridad*, Madrid, No. 135, September 15, 1894, reprinted in *Periódico Hebdomario Escolar* (student newspaper in Manila), November 9, 1901, and again reprinted in *Revista Histórica de Filipinas*, Manila,

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[1]Friedrich Hirth and W.W. Rockhill, *Chau Ju-Kua: His Work on the Chinese and Arab Trade in the Twelfth and Thirteenth Centuries*, entitled *Chu-fan-chi* (St. Petersburg, 1911).

[2]Stangl's English translation appeared in the *Revista Histórica de Filipinas*. Manila, June, 1905, Vol. I, No. 2.

[3]Blair and Robertson, *The Philippine Islands 1493-1898* (Cleveland, Arthur H. Clark Co., 1903 - 1909), Vol. XXXIV, pp. 185-191. This Blair-Robertson English translation is misleading, for it merges Chapters 40 and 41 in Chau Ju-kua's work into one chapter — Chapter XL.

[4]The Wu Ching-ho English translation appears in his book entitled *A Study of References to the Philippines in Chinese Sources from Earliest Times to the Ming Dynasty* (Quezon City, 1959).

Annex 252

Jeanette Greenfield, *China's Practice in the Law of the Sea* (1992)

China's Practice in the Law of the Sea

JEANETTE GREENFIELD

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2

China's Maritime Position: Coastline, Shipping, Ports, and Rivers

I. GEOGRAPHY AND MARITIME POLICY

China has a coastline of approximately six thousand miles and hence an extensive continental shelf. The total sea area in the China Seas is about 3.9 million square kilometres. The Bohai Gulf, the Yellow Sea, and the East China Sea are all situated to the east of the Chinese mainland, and they are sometimes collectively called the East China Seas. The South China Sea situated to the south of the mainland is the largest and deepest as well as most complicated in topography of the four seas. The Beibu Gulf (the Gulf of Tonkin) is situated to the north-west of Hainan Island in the South China Sea. China's continental shelf is considered to be one of the most extensive in the world. In the Bohai Gulf and the Yellow Sea, the continental shelf extends to the entire sea area. The continental shelf of the Bohai Gulf totals 83,000 square kilometres, and that of the Yellow Sea 404,000 square kilometres, measured out to the 200-metre isobath. In the East China Sea the shelf covers most of the sea area totalling about 1,059,000 square kilometres. and only the South China Sea has a narrower continental shelf of 728,000 square kilometres, all measured out to the 200-metre isobath.

In the last forty years China has emerged as a fishing and maritime power, and therefore has a strong interest in all matters related to the law of the sea. In the past the Chinese did not have to consider the sea or sea power as it was irrelevant to the maintenance of a great land empire, China's geographical position tending to impose a unity. In those earlier times the 'eastern sea' was a vast ocean on the other side of which there were no lands of comparable size or importance.[1] There are early records of Chinese trading vessels in the South China Sea going back to the fourth and fifth centuries. During the Ming Dynasty (1368–1644) the naval commander Cheng Ho made a number of major expeditions in

[1] C. P. Fitzgerald, 'Europe and China: An Historical Comparison', lecture delivered to Australian Humanities Research Council, Nov. 1968, (Sydney, 1969), 8–9; K. Klein, 'China's Maritime Voyages', *Monsoon* (Apr. 1978), 45–8.

South-East Asia. The Europeans began their coastal domination there in the sixteenth century.[2]

Interestingly, China's earliest known actual invocation of modern international law related to the law of the sea. In 1864 the principles of international law governing maritime territory were invoked by China in relation to a peace treaty between Prussia and China, as a result of which China secured Prussian surrender of Danish vessels, which had been seized in China's 'inner ocean'. This term has been said to mean territorial waters, but has also been translated as 'maritime territory' or 'ocean area within the jurisdiction of a nation'. In the course of invoking the principle of maritime territory it was stated that the various inner oceans under China's jurisdiction had usually been specifically provided for in all her peace treaties with foreign nations.[3]

After 1949, the People's Republic of China did much towards the formulation of a maritime policy. But it was only after entry into the United Nations in 1971,[4] and participation in the United Nations' Seabed Committee 1971–2[5] that more comprehensive expressions of policy emerged. The only official and specific sea claim by China remains that of the 1958 Declaration concerning the width of territorial waters. However, her position concerning all other issues has emerged, particularly through her participation in the UN Law of the Sea Conference 1973–8 and 1980–2.[6] By the time that the new Law of the Sea Convention was

[2] Leng Lee Yong, *South East Asia and Law of the Sea* (Singapore, 1980), 4.

[3] I. C. Y. Hsu, *China's Entrance into the Family of Nations* (Cambridge, Mass., 1960), 133.

[4] The General Assembly on 25 Oct. 1971, decided to restore all its rights to the People's Republic of China and to recognize the representatives of its government as the only legitimate representatives of China to the United Nations; Resolution 2758 (XXVI), *UN Monthly Chronicle*, 8, No. 10, (Nov. 1971), 34–61; Text of Resolution, p. 61, also *ILM*, 11, (1972), 561.

[5] Full name: United Nations Committee on Peaceful Uses of the Seabed and Ocean Floor Beyond the Limits of National Jurisdiction.

[6] Chinese representatives whose names reappear with frequency as spokesmen at the UN Seabed Committee meetings and subsequently at the Third International Conference on the Law of the Sea: Mr Shen Weiliang, Deputy Director, Dept. of International Organizations, Law and Treaties, of the Foreign Ministry. Mr Chen Chihfang, Ambassador to Switzerland. Mr Chuang Yen, Ambassador Extraordinary and Plenipotentiary, Deputy Permanent Representative to the UN (A/AC 138/INF 8 (1973), 3). Adviser Ni Zhengyu (A/CONF 62/INF 4 (Apr. 1975), 11, (author of the monograph, *The Question of Jurisdiction in International Law* (Peking, 1964) referred to in sections of this work, and currently judge of the ICJ), Legal Expert, Department of International Organizations, Law and Treaties, of the Foreign Ministry. Mr Chai Shufan (Leader of the delegation, Caracas), Vice-Minister of Foreign Trade. Mr Ling Ching, Deputy Director of the Dept of International Organizations, Law and Treaties, of the Foreign Ministry (A/CONF 62/INF 3/REV. 2 (16 Jan. 1975), 12). Mrs Ho Liliang, Counsellor, Permanent Mission to the UN (A/CONF 62/IBF 1 (10 Dec. 1973), 6). Mr Pi Chilung (Leader of the Delegation, Geneva), Director of the Department of International Organizations, Law and Treaties, of the Foreign Ministry. Mr Lo Juyu, Deputy Director of the National Bureau of Oceanology. Mr Ke Tsaishuo, Official, Department of International Organizations, Law and Treaties, of the Foreign Ministry (A/CONF

concluded her policies on such matters as innocent passage, international straits, continental shelf, exclusive economic zones, and seabed mining had been made clear.

As early as 1952, the Chinese had translated the Second revised edition of the classic work by Higgins and Colombos, *The International Law of the Sea*.[7] In addition, a number of articles appeared from time to time in journals concerning issues relating to China's interests in the sea,[8] but there was apparently no general treatise on the subject. China lacked that long tradition of free international intercourse in all spheres, including the maritime, which might have stimulated such a study. Instead, as she emerged from isolation, China dealt in a pragmatic way with maritime matters as these arose in relation to concrete questions. Matters of national security, the status of offshore islands, their effect in generating territorial sea, and the potential exploration of offshore resources in relation to those islands and continental shelf have heightened China's concern for the law of the sea, and been the subject of her most direct and immediate attention.

Islands in particular, have been of great importance in China's more recent international practice. It was the conflict which centred around the offshore islands of Quemoy and Matsu, which precipitated the 1958 Declaration Concerning China's Territorial Sea.[9] In it, the government of the People's Republic of China declared a twelve mile territorial sea, some considerable time before this became a general practice; it also emphasized the straight baseline method, although China was not and never became a party to the 1958 Geneva Conventions on Territorial Sea and Continental Shelf. The Declaration also reaffirmed China's sovereignty over certain islands including the Taiwan and the Penghu areas. The issue of Taiwan remains unresolved, and in the East China and Yellow Sea there are conflicting claims between China and Japan

62/INF 4 (Apr.1975), 11). Mr An Chihyuan, Ambassador Extraordinary Plenipotentiary, Permanent Representative to the Office of the United Nations at Geneva (A/CONF 62/INF 8 (Apr. 1978), 10); legal adviser, Wang Tieya, Professor of International Law, Beijing University (A/CONF 62/INF 10 (17 Apr. 1979)). Yu Peiwen, Ambassador, permanent representative to the office of the UN (Chairman of the delegation), Shen Weiliang, Deputy Director, Department of International Law and Treaties, Ministry of Foreign Affairs (Vice-Chairman of the delegation), Legal advisers: Ni Zhengyu, legal adviser, Ministry of Foreign Affairs, Zhang Hongzhen, legal adviser, Department of International Law and Treaties, Ministry of Foreign Affairs (A/CONF 62/INF 15/Add 1 (27 Aug. 1981)).

[7] Alexander P. Higgins, 2nd rev. edn. by C. John Colombos, *The International Law of the Sea* (*Hai Shang Kuo Chi Fa*), trans. Wang Ch'iangsheng (Peking, 1957) (translation, however, not of the English, but of the Russian version by Judge Serge Krylov of the ICJ; see note, Preface of 6th edn. of above, p. v).

[8] See Bibliography; In the 1980s see especially the *Chinese Yearbook of International Law*. The names of the Chinese journals are also indicated in the List of Abbreviations.

[9] Cheng Tao, *AJIL* 63 (1969), 52; *SCMP* No. 1851 (1958), 14; *NCNA* (6, 7 Sept. 1958); *ARWE* 200 (1958), 354.

over the Diaoyutai islands (referred to by the Japanese as Senkaku islands being part of their Ryukyu islands). In the South China Sea, disputes exist between China and Vietnam and also with Taiwan, over the Paracel islands (known by the Chinese name of Hsisha); and between China, and Vietnam, Taiwan, and the Philippines over the Spratly islands (known by the Chinese name of Nansha); China also claims the Scarborough Reef (Huangyen), the Macclesfield Bank (Chungsha), and the Pratas Reef (Tungsha), the latter of which is claimed by Taiwan. There is also no agreement as to the delimitation of the continental shelf boundary between China and Japan and China and Korea. In addition issues relating to delimitation of the territorial sea, economic zones, fisheries rights, and the juridical character of straits, have all seriously challenged old established concepts concerning innocent passage, and freedom of the seas.

2. DEVELOPMENT AS A SHIPPING POWER

By 1984 the People's Republic of China had become one of the world's foremost seafaring countries (see Map 1(*a*)). Her merchant marine was estimated to be at least the fourteenth largest in the world in terms of tonnage. In terms of numbers of vessels, China ranked eighth, directly behind the United States. Her position may be even higher in terms of true ownership. In addition to her ownership of a large number of foreign vessels, the CPR is heavily involved in the ship charter market, though this involvement is decreasing. In the 1970s, up to two-thirds of China's foreign trade was carried on chartered ships, China being 'the single largest market for Greek-owned dry cargo ships' and the leading charterer on the London market. There are more than eighty sea transport enterprises in China. Most of them are small with just one or two vessels, funded or jointly operated with local governments, and engaged mostly in offshore transport. The China Ocean Shipping Company (COSCO) is the biggest ocean shipping enterprise and its dead weight tonnage accounts for 75 per cent of China's total.[10] Currently, more than half of China's foreign trade is carried by Chinese vessels, but the tonnage under charter continues to be significant. It has the biggest navy in the world, consisting of at least 1,235 vessels, and the third largest submarine fleet with a number estimated between 65 to 103 (see Map 1(*b*)). In total, more than 2,000

[10] Eckart Broedermann, *Journal of Maritime Law and Commerce*, 15, No. 3 (July 1984), 419, 423; 'China's Ocean-Going Fleets'; *PR* 15 (11–17 Apr. 1988), 22–4; China's ocean-going fleet's deadweight tonnage (DWT) is now 17 million, ninth of all countries in the world. In terms of the number of vessels, China has been placed sixth. In 1987, China's shipping-freight volume was 65 million tons.

Annex 253

Cordell D.K. Yell, “Traditional Chinese Cartography and the Myth of Westernization” in *The History of Cartography*, Vol. 2, Book 2 (J.B. Harley and D. Woodward, eds. 1994)

THE HISTORY OF CARTOGRAPHY

VOLUME TWO, BOOK TWO

Cartography in the Traditional East and Southeast Asian Societies

Edited by
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and
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Annex 253

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7 · Traditional Chinese Cartography and the Myth of Westernization

CORDELL D. K. YEE

In the preceding chapter I stated that Chinese cartography did not dissociate itself from the visual arts until the nineteenth century. That statement seems to be contradicted by accounts of Chinese mapping in the late Ming (1368–1644) and Qing (1644–1911) dynasties, according to which Chinese cartography assimilated techniques imported from Europe and became a "science" in the Western sense of the word. What this new science of Chinese cartography involved was a conception of the earth as spherical and the use of a coordinate system for locating points on the earth's surface. This entailed the use of mathematical techniques for projecting points on the earth's spherical surface to a plane mapping surface. To judge from previous accounts of Chinese cartography, European cartography so displaced traditional Chinese practices that they disappeared or at least are not worth mentioning. The accounts of late Ming and Qing cartography in works by Wang, Needham, Lu, and others focus on the Jesuit mapping of China.[1] For these historians, small-scale mapping is the measure of all cartography, and so other aspects of cartographic culture are overlooked. Representatives of the earlier tradition are barely mentioned. Accounts like these foster the impression that in the eighteenth century, Chinese and European cartography became indistinguishable.

When European cartography was first introduced into China in the late sixteenth century, the major difference between European and Chinese cartography was that traditional Chinese mapmakers treated the earth as flat. According to previous accounts, that treatment changed after a different world model and Ptolemaic cartographic techniques were brought to China by Jesuit missionaries. Here I examine the Chinese responses to those works, insofar as they were relevant to Chinese cartography. Perhaps lack of response is a better way to describe the situation. For most of the period under discussion, from the late sixteenth century to the beginning of the twentieth, Chinese cartographic practice bears few traces of European influence. The conversion of Chinese cartography to the Ptolemaic system was not as swift or complete as previous accounts have made it seem.

THE INTRODUCTION OF EUROPEAN CARTOGRAPHY

It was not the primary aim of the Jesuits to train the Chinese in European science and technology. In fact, to most Jesuits, even to consider this aim was controversial. The missionaries Alessandro Valignani (1539–1606) and Michele Ruggieri (1543–1607), however, were perceptive enough to see that Sinicization was the only way to secure a foothold in China. Matteo Ricci (1552–1610) followed their line of reasoning, though not without great pressure from his superiors against such a policy. Ricci believed that the way to win Chinese converts to Christianity was through indirect means, rather than by a direct challenge to Chinese values and beliefs. He attempted to win over the intellectual elite by recourse to the scientific achievements of European culture, in mathematics, astronomy, and cartography. Once Chinese intellectuals appreciated the advantages of European science and technology, according to Ricci's line of thought, they might be induced to convert to Christianity. Members of the elite were targeted for attention because the Jesuits saw them as a way to the imperial court. If the emperor could be converted, the rest of the empire would follow. For the Jesuits, then, maps were part of what Jacques Gernet has described as an "enterprise of seduction."[2]

Though scientific aims were not of paramount concern to the Jesuits, their cartographic works had the potential

1. See Wang Yong, *Zhongguo dilixue shi* (History of geography in China) (1938; reprinted Taipei: Shangwu Yinshuguan, 1974); idem, *Zhongguo ditu shi gang* (Brief history of Chinese cartography) (Beijing: Sanlian Shudian, 1958); Joseph Needham, *Science and Civilisation in China* (Cambridge: Cambridge University Press, 1954–), vol. 3, with Wang Ling, *Mathematics and the Sciences of the Heavens and the Earth* (1959); Chen Cheng-siang (Chen Zhengxiang), *Zhongguo dituxue shi* (History of Chinese cartography) (Hong Kong: Shangwu Yinshuguan, 1979); Chen Feiya et al., eds., *Zhongguo gudai dilixue shi* (History of ancient Chinese geography) (Beijing: Kexue Chubanshe, 1984); Lu Liangzhi, *Zhongguo dituxue shi* (History of Chinese cartography) (Beijing: Cehui Chubanshe, 1984).

2. Jacques Gernet, *China and the Christian Impact: A Conflict of Cultures*, trans. Janet Lloyd (Cambridge: Cambridge University Press, 1985), 15.

power and presenting "the prediction of a solar eclipse on the first day of the eighth month of this year [1 September 1644], calculated according to new Western methods": "In some provinces the eclipse will appear earlier, in others later. The various data are listed here for examination. I humbly beg a decree to the [board of rites] to test the measurements publicly at the proper time."[25] Schall von Bell's request was granted in an edict that said in part: "For many years the old calendar has been inaccurate whereas the new methods from the West have often been accurate. We knew this."[26] The test confirmed what the imperial court had already known: "As for the hour, minute, and second, the position, and other details regarding the start of the eclipse, the total eclipse, and the sun's recovery, only the new methods from the West coincided point for point. The Datong [the official Ming method] and the Islamic methods were both erroneous as to the time."[27] On 19 October 1644 the Western calendar was officially adopted, and on 31 October Schall von Bell was named director of the imperial board of astronomy.

During the Kangxi period (1662–1722), the Jesuits were given an opportunity to demonstrate the virtues of their cartographic techniques. They accompanied the emperor on northern expeditions, and they had taught him how to take astronomical measurements and to measure elevations and distances. The Kangxi emperor had a deep interest in mathematics, and he was also interested in learning geography: "Our territory is complicated, broad and vast, extending ten thousand *li*. . . . Climatic conditions vary, and the people's customs differ. These have not been compiled. How is one to know them completely? We observe that writers on geography have been fairly numerous since the Han dynasty. But their accounts vary in their amount of detail, and reports produced then and now differ. We therefore order that a bureau be set up to collect all kinds of documents, verify the gazetteers, and compile a book."[28] This book was to be titled *Da Qing yitong zhi* (Comprehensive gazetteer of the Great Qing realm, completed 1746), and its editors were enjoined to report on strategic passes, mountains, streams, customs, and personages as well as to draw maps.

The lack of uniform practices of representation among Chinese cartographers, as is described below, hampered the production of a comprehensive geographic record such as the emperor envisioned. In 1698 the Jesuit missionary Dominique Parrenin (1665–1759) examined various provincial maps and found errors in the location of prefectures, counties, and cities. He memorialized the emperor and recommended a survey of the empire. The emperor responded by asking Joachim Bouvet (1656–1730) to return to France and recruit more missionaries to come to China. Bouvet went back to France and returned with more than ten Jesuits trained in astronomy, mathematics, geography, and surveying. The emperor put them to the test. About 1705, for example, the emperor commissioned them to survey and map the region of Tianjin, in part to determine whether flooding in the area could be prevented and in part to judge the exactitude of European cartographic methods.[29] The Jesuits completed the map and presented it to the emperor within seventy days; he was satisfied with the results.

In 1707 the emperor commissioned the Jesuits to survey the area around the capital of Beijing and to compare their results with the information on old maps. A new map was completed in six months and presented to the emperor, who inspected it and pronounced it superior to previous efforts. In 1708 he sent Jesuits out to survey and determine the position of the Great Wall. According to the Jesuit missionary Antoine Gaubil (1689–1759), "Those who are interested in the geography of China will perhaps be very pleased to know: first that it is Fr. Parrenin who found the means to nurture in the Kangxi emperor the desire to see a map of the Great Wall; second that the prince was so pleased with the map of the wall made by Frs. Bouvet, Régis, and Jartoux that he resolved to have made the map of all of his vast states in China and Tartary."[30] Gaubil wrote this statement in 1728 and does not specify when Parrenin proposed that a map of the Great Wall be made. Foss seems to identify this proposal with the one for a comprehensive survey,[31] but Gaubil's language does not suggest a comprehensive survey. Parrenin was in China when the survey of the Great Wall was commissioned, and it seems more likely that Gaubil was referring to that survey.

The survey of the Great Wall began nearly a decade of surveying that culminated in the publication of the first Jesuit atlas of China. The emperor apparently saw the political advantages of measured maps: they would improve communication and aid in military planning. The Great Wall itself was vital to both government concerns

25. *Shizu shilu*, 5.24a (note 22).

26. *Shizu shilu*, 5.24a (note 22).

27. *Shizu shilu*, 7.1b (note 22).

28. *Da Qing Shengzu Ren (Kangxi) huangdi shilu* (Veritable records of Shengzu, emperor Ren [Kangxi], of the Great Qing, compiled ca. 1739) (1937; reprinted Taipei: Hualian Chubanshe, 1964), 126.15b–16a.

29. This survey is described in Jean Baptiste Du Halde, ed., *Lettres édifiantes et curieuses, écrites des missions étrangères par quelques missionnaires de la Compagnie de Jésus*, 27 vols. (Paris: Nicolas le Clerc, 1707–49), 10:413–15, reproducing a letter written in 1705 by Jean-François Gerbillon (1604–1707).

30. Antoine Gaubil (1689–1759), *Correspondance de Pékin, 1722–1759* (Geneva: Librairie Droz, 1970), 214. The translation is based on that in Theodore N. Foss, "A Western Interpretation of China: Jesuit Cartography," in *East Meets West: The Jesuits in China, 1582–1773*, ed. Charles E. Ronan and Bonnie B. C. Oh (Chicago: Loyola University Press, 1988), 209–51, esp. 223–24.

31. Foss, "Western Interpretation of China," 223 (note 30).

and thus an understandable choice. The task of measuring the wall fell to Bouvet, Jean-Baptiste Régis (1664–1738), and Pierre Jartoux (1669–1720). On 4 June 1708 they left Beijing and in four days reached Shanhaiguan, where the wall meets the sea. They then followed the wall westward, keeping track of direction with compasses, measuring distance with cords, and determining latitude from the height of the sun. After two months Bouvet was forced to return to Beijing because of illness, but Régis and Jartoux kept on. On 10 January 1709 they returned to Beijing with a map about five meters long, depicting gates, forts, rivers, hills, and mounds. The emperor was pleased with the map and directed that the surveying continue to cover the rest of the empire. Gaubil provides this account of the Jesuits' surveying methods:

> These Fathers requested a quadrant of two feet two inches in radius; they often took care to check it, and they constantly found that it represented elevations too great by a minute. They had large compasses, many other instruments, a pendulum and other things for the execution of the emperor's orders. With cords divided precisely, they accurately measured the way from Peking. . . . On this road they often took by observation the height of the meridian of the sun; they observed at every moment the rhumb and took care to observe the variation and declination of the peak. . . . In all these vast regions, the Fathers . . . have observed the height of the pole, observed the rhumbs . . ."[32]

The survey included tributary states such as Korea, but the Jesuits sometimes encountered difficulties in surveying such areas. In the case of Korea, any measurements they obtained were evidently gotten through subterfuge. Matteo Ripa (1682–1745), a secular priest in Beijing, wrote that the Koreans were "extremely jealous of strangers" and denied entrance to the Europeans:

> This part of the business was consequently executed by a mandarin, purposely instructed by the Jesuits, and then sent thither by the Emperor, under pretext of an embassy: even then they watched every movement of the mandarin so closely, that he could not take a step without being observed by the guards, who never left him, and wrote down all he said or did. Thus, being unable to measure the longitude with a line, he could only calculate the miles by the hour. This ambassador, with whom I was intimately acquainted, informed me that he had only succeeded in taking the sun's altitude by making them believe that the instrument he used was a sun-dial, and that he stopped to look at it in order to ascertain the time.[33]

Ripa's account gives the impression that the Jesuit map of Korea (fig. 7.7) was based on a survey, but this seems to be true only of the northern portion. Ripa's account needs to be supplemented by Régis's statement, reported by Jean Baptiste Du Halde (1674–1743), that a map received by a "Tartar lord" (an envoy) from the Koreans served for the most part as the basis of the Jesuit map of Korea (see pp. 299–305).

The Jesuits' survey of the empire was completed in 1717, and an atlas was presented to the emperor the following year. It was titled *Huangyu quanlan tu* (Map of a complete view of imperial territory), perhaps in recognition of the emperor's desire to be able to view all parts of the empire at a glance.[34] The emperor was pleased with the results, saying that "the mountain ranges and waterways were all in accord with the 'Yu gong' [Tribute of Yu]."[35] The maps in the atlas used a trapezoidal projection; depicted the Qing empire, including Mongolia and Manchuria, east of Hami; and were drawn to a scale of 1:400,000 to 1:500,000. The meridian running through Beijing was adopted as the prime meridian, in part to avoid errors in longitude that would be introduced by adopting a European prime meridian.[36]

The Kangxi Jesuit atlas, as it came to be known, had a complicated publication history. The earliest edition was printed in China with woodblocks and consisted of twenty-eight maps. In 1719 a manuscript version with thirty-two maps was produced. This version was divided into forty-four copperplates engraved by Matteo Ripa, who produced an atlas drawn to a scale of 1:1,400,000.[37]

32. Gaubil, *Correspondance de Pékin*, 214 (note 30). The translation is based on Foss, "Western Interpretation of China," 227–28 (note 30).

33. Matteo Ripa, *Memoirs of Father Ripa, during Thirteen Years' Residence at the Court of Peking in the Service of the Emperor of China*, trans. and ed. Fortunato Prandi (London: John Murray, 1846), 65.

34. Joseph-Anne-Marie de Moyriac de Mailla, *Histoire générale de la Chine ou annales de cet empire*, 13 vols. (Paris: Grosier, 1777–85), 11:314.

35. *Qing shi gao jiaozhu* (Edited and annotated draft history of the Qing, original draft completed 1927), 15 vols. (Taipei: Guoshiguan, 1986–), chap. 290 (11.8773–74). See also *Qing shi* (History of the Qing), 8 vols. (Taipei: Guofang Yanjiuyuan, 1961), chap. 284 (5:4010).

36. Jean Baptiste Du Halde, *Description géographique, historique, chronologique, politique, et physique de l'empire de la Chine et de la Tartarie chinoise*, 4 vols. (Paris: Lemercier, 1735), 1:xxxvi. An English translation of this work was published as *A Description of the Empire of China and Chinese-Tartary, Together with the Kingdoms of Korea, and Tibet*, 2 vols. (London: Edward Cave, 1738–41).

37. Work on the plates began in 1718, perhaps with the first edition as a rough guide. Copies of the copperplate edition survive in England (King George III's Topographical Collection, British Library, London) and Italy (Istituto Universitario Orientale di Napoli). See Foss, "Western Interpretation of China," 234 and 249 n. 93 (note 30), and Helen Wallis, "Chinese Maps and Globes in the British Library and the Phillips Collection," in *Chinese Studies: Papers Presented at a Colloquium at the School of Oriental and African Studies, University of London, 24–26 August 1987*, ed. Frances Wood (London: British Library, 1988), 88–96, esp. 93.

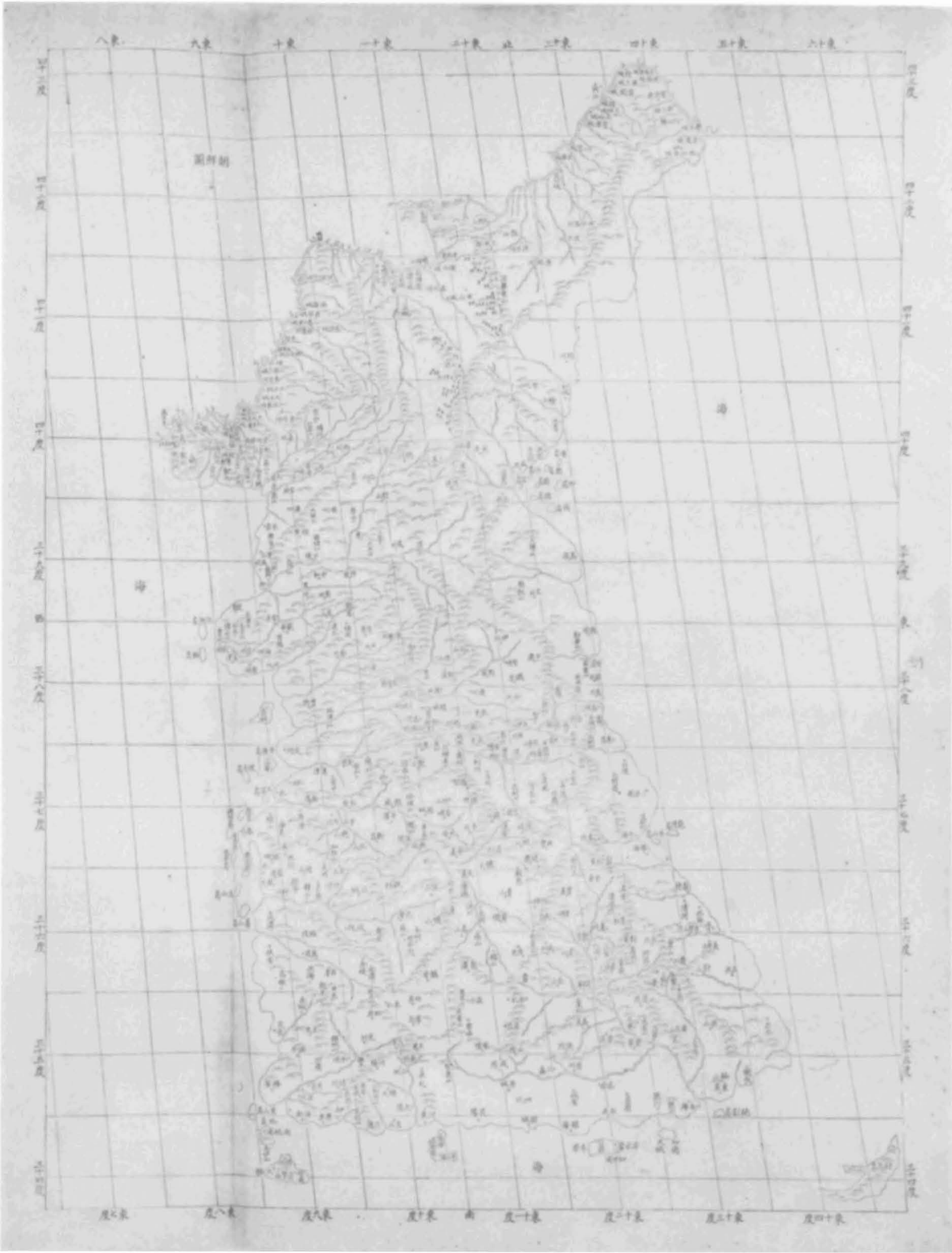

FIG. 7.7. MAP OF KOREA FROM THE *HUANGYU QUANLAN TU*. This map is from the 1721 edition of the atlas. The map is close to modern representations of northern Korea down to about the thirty-ninth parallel, but below that the image suffers in comparison. Seoul, for example, is placed too far from the west coast, and the Han River flows to the southwest instead of the northwest.

Size of the original: 58 × 43 cm. By permission of the British Library, London (Maps C.11.d.15).

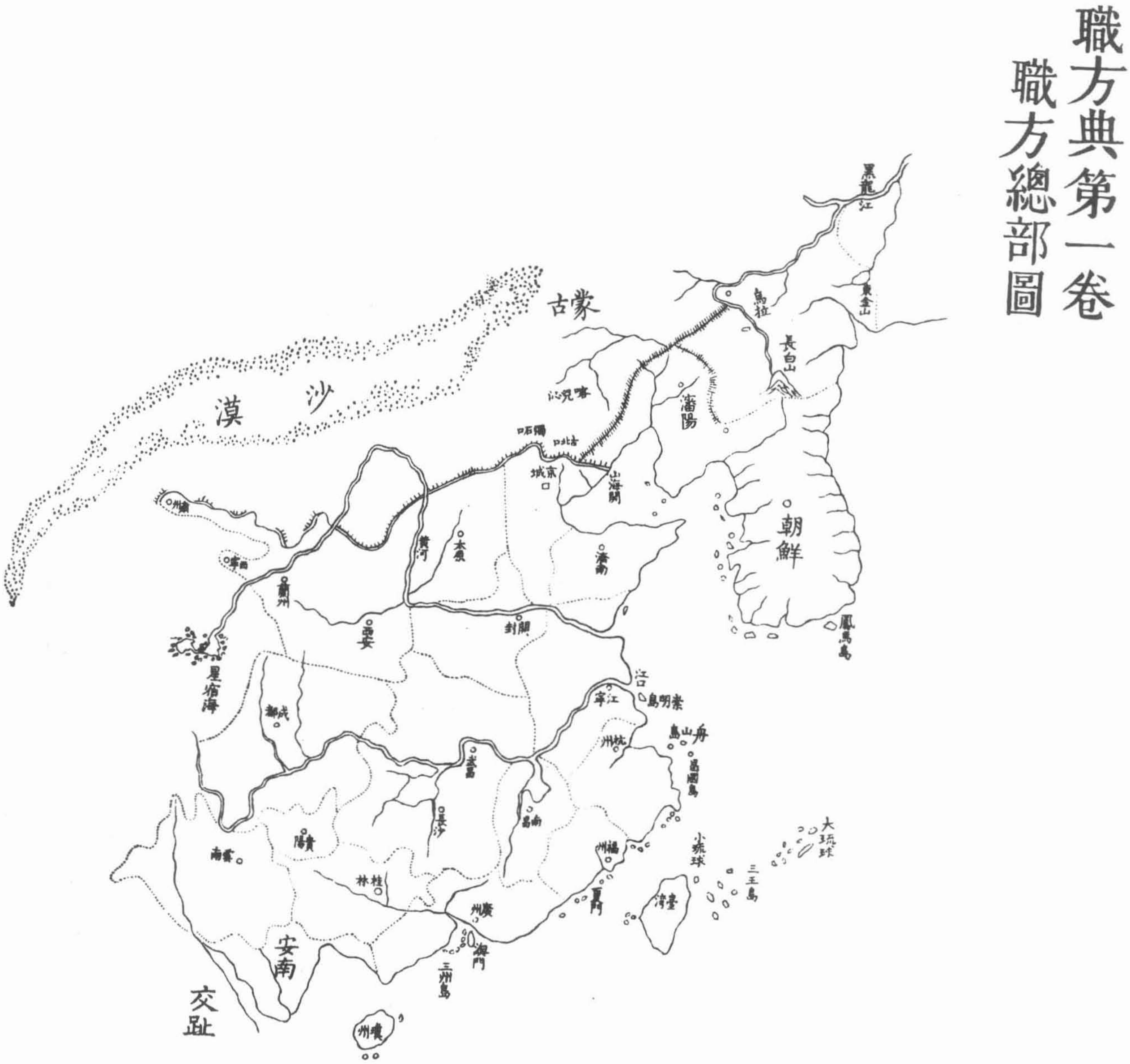

FIG. 7.8. CHINESE VERSION OF A JESUIT MAP OF THE QING EMPIRE. This map from a Chinese encyclopedia was based on the one prepared for the Kangxi emperor by Jesuit missionaries. One difference is the lack of parallels and meridians that appeared on the original.

Size of the image: 20 × 19 cm. From Chen Menglei, Jiang Tingxi et al., comps., *Gujin tushu jicheng* (completed 1726, printed 1728) (reprinted Shanghai: Zhonghua Shuju, 1934), vol. 63.

This version is mentioned in the *Qing shi gao* (Draft history of the Qing, completed 1927): "In the fifty-eighth year [of the Kangxi reign period] the atlas was completed. It was a comprehensive atlas, consisting all together of thirty-two sheets. These were separate provincial maps, each province on one sheet."[38] A second woodblock edition was printed in 1721, the same in format as the manuscript version of 1719 and drawn to a scale of 1:2,000,000. This woodblock edition was sent by the Jesuits to Europe and served as a source for Du Halde's *Description géographique, historique, chronologique, politique, et physique de l'empire de la Chine* (1735) and Jean Baptiste Bourguignon d'Anville's *Nouvel atlas de la Chine* (1737).[39] In 1726, 216 maps of the empire and its

38. *Qing shi gao jiaozhu*, chap. 290 (11.8773) (note 35).

39. Du Halde, *Description de la Chine* (note 36); Jean Baptiste Bourguignon d'Anville (1697–1782), *Nouvel atlas de la Chine, de la Tartarie et du Thibet* (The Hague: H. Scheurleer, 1737). The woodblock edition

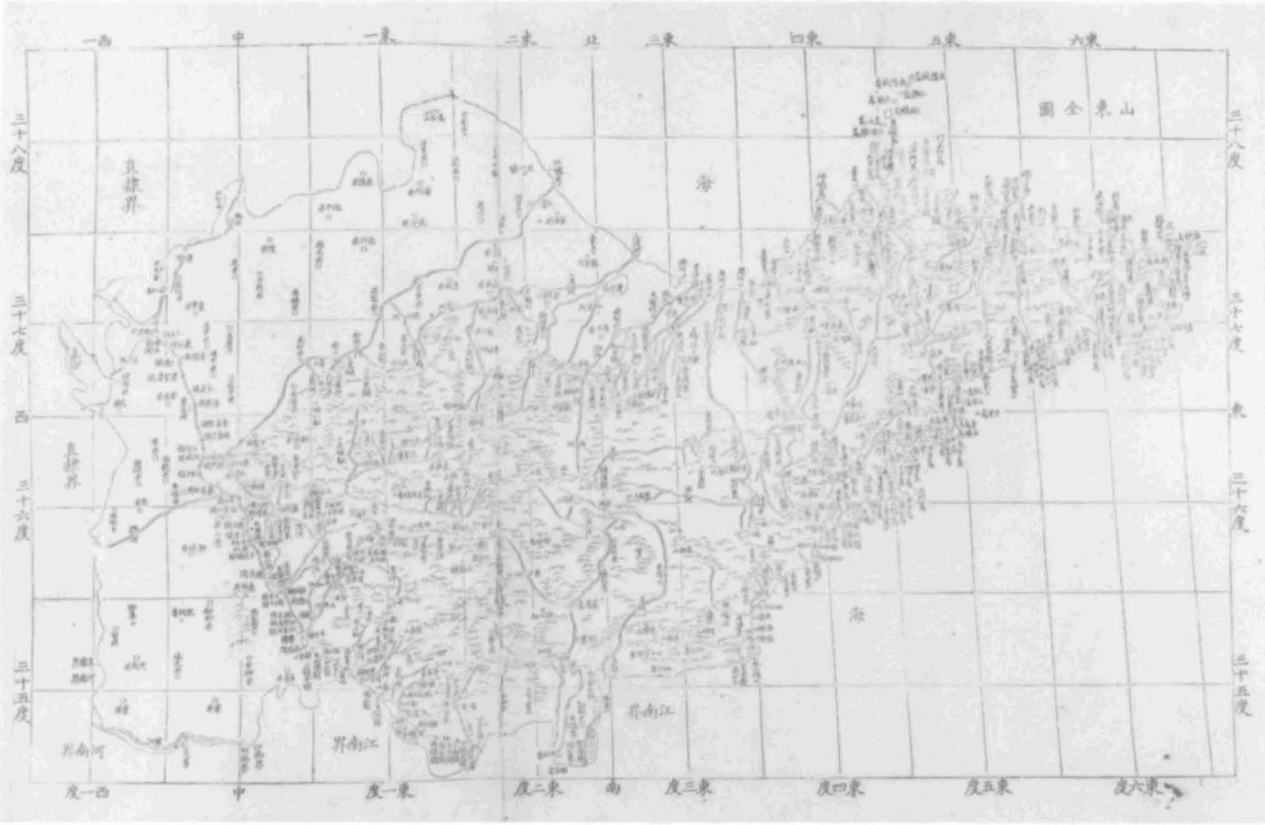

FIG. 7.9. MAP OF SHANDONG PROVINCE FROM THE *HUANGYU QUANLAN TU*. From the 1721 edition of the atlas. Size of the original: 25.5 × 40 cm. By permission of the British Library, London (Maps C.11.d.15).

administrative subdivisions, excluding Mongolia and Tibet, were included in the Chinese encyclopedia *Gujin tushu jicheng* (Complete collection of books and illustrations, past and present, printed 1728).[40] These were based on the maps in the Kangxi Jesuit atlas but omitted the lines of latitude and longitude (see fig. 7.8).

In recent years, some have tried to claim the Kangxi atlas as primarily a Chinese rather than a foreign achievement and thus put forth an argument for the advanced state of Chinese cartography. Chinese and Manchu assistants performed measurements for the Jesuits, and the Jesuits often relied on Chinese geographic works, though checking them when possible against their own observations. Beyond the use of parallels and converging meridians, the appearance of the maps is more Chinese than European. Toponyms appear in Chinese, and the map signs, such as those for rivers and mountains, all derive from the Chinese tradition (see fig. 7.9). For these reasons, Needham might appear justified in writing that "while the transmission of Renaissance cartography to China in the time of Matteo Ricci cannot be underestimated, the reverse transmission of geographical information about East Asia to the 17th-century geographers of Europe must also be remembered. It was owing to the solid work of generations of Chinese map-makers that knowledge of this part of the world became incorporated in modern geography."[41]

Needham's assertion about a reciprocal transmission of ideas requires some qualification. It is not totally clear that Ricci's introduction of Renaissance cartography into China was actually a case of transmission, since it is far from certain that Chinese mapmakers accepted European techniques. The evidence of Chinese maps from the time of Ricci's arrival and, as will be seen below, up through most of the nineteenth century hardly suggests a successful transmission of European cartography. Furthermore, the Kangxi atlas involved much more than a transmission of the work of Chinese mapmakers to Europe.

In the first place, the Kangxi emperor turned to the Jesuits as an alternative to Chinese mapmakers. For this

of 1721 is reproduced in the second volume (box of maps) of Walter Fuchs, *Der Jesuiten-Atlas der Kanghsi-Zeit*, 2 vols. (Beijing: Fu Jen [Furen] University, 1943).

40. See Fuchs, *Der Jesuiten-Atlas*, 1:48–56 (note 39).

41. Needham, *Science and Civilisation*, 3:590 (note 1).

reason members of the Chinese elite, who had already seen Jesuits displace native scholars from the astronomical bureau, regarded the project with suspicion. The emperor saw the initial stages of the survey as a kind of contest between cartographic traditions. In 1710, after the Jesuits presented a map of Beizhili, the provincial seat of the imperial government, the emperor examined the map himself and saw that areas he was familiar with and had previously ordered Manchus to measure had been "justly exhibited." He then "signify'd to the Missionaries that he wou'd answer for the Accuracy of it; and that if the rest proved as good, their Performance wou'd satisfy him, and be out of the reach of Criticism."[42] Without European techniques, the atlas could not have been made. The Jesuits' use of native materials was made easier by the emperor's standardization of the units of linear measurement. In 1704 the emperor stipulated that two hundred *li* should correspond to one degree of longitude, basing his decision on geodetic measurements performed by the Jesuit Antoine Thomas (1644–1709). This allowed the Jesuits to convert distance information provided by the Chinese to the European coordinate system. The standardization of map scale in the Jesuit atlas, furthermore, allowed the maps in the atlas to stand independent of text. This was another departure from Chinese tradition, which, as Ricci recognized, tended to view image and text as integral to the cartographic enterprise. Perhaps the divorce of European post-Renaissance science, and cartography in particular, from textual scholarship made it difficult for Chinese intellectuals to accept European maps or recognize them as useful, so that there was less demand for them than previous historians have assumed.

Undoubtedly, the Jesuits made use of Chinese scholarship in compiling the Kangxi atlas. But this was not merely an instance of transmission of Chinese knowledge. The Jesuits' reliance on native materials was necessitated by the scope of the project, covering more area than any previous survey. The survey was directed by about a dozen Jesuit missionaries divided into teams responsible for specific areas. The Jesuits wished to complete the project as quickly as possible, and to determine directly the position of every point deemed worthy of cartographic representation would have been too time consuming. According to Du Halde, the Jesuits determined the latitude and longitude of more than six hundred locations.[43] A "method of triangles" was used to calculate the distances between cities, checked where possible by observation of eclipses.[44] The Jesuits' use of Chinese materials was thus not a matter of uncritical acceptance. The Jesuit atlas may have drawn heavily from Chinese sources, especially for place-names, linear features such as rivers, and areal features such as mountains, but the cartographic theory underlying it was European. Locations were determined according to a coordinate system based on a conception of the world different from that implied by the Chinese cartographic grid. The survey techniques needed to obtain these measurements were unknown to Chinese mapmakers, despite the use of superficially analogous techniques by Chinese astronomers (see pp. 123–24). Moreover, the technology and techniques used to determine position were all of European origin: the quadrant and tables of declination for latitudinal measurement; and for longitudinal measurement, timepieces and telescopes for the observation of the moons of Jupiter or the earth's moon. For these reasons, the Jesuit mapping of China is perhaps better treated as an example of European mapping adjusting to new cultural circumstances and drawing on information already available in China.[45]

SUPPLEMENTAL SURVEYS FOR THE IMPERIAL ATLAS

The Jesuit surveys, though extensive, did not cover the entire empire. To supplement them, the central government commissioned regional surveys, so as not omit any of its territory from the imperial atlas. In the case of Tibet, for example, a descriptive survey of the topography of Tibet was completed in 1711 and a map drawn, but because the map lacked lines of latitude and longitude, it was difficult to incorporate it into the Jesuit atlas. Thus the map was not used. The Kangxi emperor then commissioned a measured survey that was carried out by a mathematician from the imperial board of astronomy. The results of this survey were compiled in a map submitted to Jesuit scholars in 1717 for review. They found a number of mistakes: for example, the city of Lhasa was shown as lying at about 30.5° north latitude, when its actual position is about 29.4°. Thus a team of surveyors was dispatched to recheck certain of the latitudinal and longitudinal measurements. A complete resurvey was not ordered because of a wish not to offend the official trained at the imperial board of astronomy and, perhaps more important, because military conflict with competitors for Tibet made such a survey potentially dangerous. For reasons that are unclear, the position of Lhasa is still

42. Du Halde, *Description of the Empire*, 1:viii (note 36).

43. Du Halde, *Description of the Empire*, 1:viii (note 36). De Mailla lists about 630 points for which latitude and longitude were determined; see *Histoire générale*, 12:179–96 (note 34). According to Matteo Ripa, latitude was determined with "mathematical instruments" and longitude with "long chains" (*Memoirs*, 65 [note 33]).

44. Du Halde, *Description of the Empire*, 1:x (note 36). The "method of triangles" was perhaps triangulation as developed by Gemma Frisius (1508–55) in 1533.

45. Other useful treatments of Jesuit surveys are Foss, "Western Interpretation of China" (note 30); Fuchs, *Der Jesuiten-Atlas* (note 39); and Walter Fuchs, "Materialien zur Kartographie der Mandju-Zeit," *Monumenta Serica* 1 (1936): 386–427.

Annex 254

T-C Huang, et. al., “The Flora of Taipingtao (Itu Aba Island)”, *Taiwania*, Vol. 39, No. 1-2 (1994)

Taiwania, 39(1-2): 1-26. 1994

THE FLORA OF TAIPINGTAO (ABA ITU ISLAND)

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ABSTRACT: A Botanical inventory at Taipingtao of South China Sea was carried out the first time during April 19 to 23, 1994. One hundred and ten species are recorded. Eighty one out of 109 species are considered as native vascular plants. Most of them are tropical strand plants which form the coastal forest of the island. Nine species, i.e. *Ochrosia oppositifolia, Acalypha boehmerioides, Caesalpinia major, Triumfetta procumbens, Pipturus argenteus, Cayratia trifolia, Digitaria setigera var. calliblepharata, Stenotaphrum micranthum and Pandanus tectorius*, were not recorded previously in the Flora of Taiwan.

KEYWORDS: Flora, Taipingtao.

INTRODUCTION

Taipingtao (Aba Itu Island), belonging to Kaohsiung City, Taiwan, politically, is situated on Tizard Bank and Reefs of the South China Sea at latitude 10° 22'50"N and longitude 114 ° 20'30"E about 1,600 kilometers away from Kaohsiung Harbour, Taiwan (Fig. 1). This island is oblong in shape extending from southwest to northeast with the longest length about 1,300 meters and widest width about 400 meters bearing 0.48 square kilometers in area.

The island is an atoll consisting of a tropical reef covered with sandy coral and shell. It is rather flat and low with an elevation of only 4 meters.

According to the meteorological annual report of the Navy during the past five years(Chinese Navy Weather Center, 1989-1993), the weather conditions are as follows: The daily average temperature is 28.5℃. The average wind speed is 3 m/s. It blows softly from the southwest from June to September, but sometimes, influenced by typhoon's outside current, the wind is strong, up to 14 m/s. It blows from the northeast from October to April, and is rarely struck by typhoons when the wind speed may be up to 12 m/s. The average annual humidity is about 83 %. It rains in summer and winter. The average annual precipitation is about 1,500 mm, but the range in precipitation is large in the past five years, from 669 mm to 2,144 mm.

The underground water is salty and unusable for drinking.

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A tomb more than one hundred years old indicates that human activities started long ago on this island. A stone tablet made by the Japanese pointed out that Japanese once were present. Now Taiwan's army resides here and puts up constructions which more or less impact the natural vegetation of this island.

To date, no botanical inventory has been undertaken for the flora of this island.

The plants' determination and distribution patterns were determined from the Flora of Taiwan(Li et al. 1975-1979, Huang & Ohahsi, 1993),the Flora of Java(Baker & van den Brink, 1963-1968), An Enumeration of Philippine Flowering Plants(Merrill, 1923-1926), the Flora of Malay Peninsula(Ridley, 1923-1925), and the Flora of Okinawa(Walker, 1976)

The plants are classified into four groups in the order of Fungi, Pteridophytes, Dicotyledons and Monocotyledons. All taxa are listed alphabetically. The field collections were made by Tseng-Chieng Huang, Shing-Fan Huang and Kuo-Cheng Yang during April 19 to 23, 1994. Specimens are deposited in the TAI-Herbarium, Botany Department, National Taiwan University. The vouchers are also listed for each species to make further examination possible later.

Nine species, i.e. *Ochrosia oppositifolia*, *Acalypha boehmerioides*, *Caesalpinia major*, *Triumfetta procumbens*, *Pipturus argenteus*, *Cayratia trifolia*, *Digitaria setigera* var. *calliblepharata*, *Stenotaphrum micranthum*, and *Pandanus tectorius*, do not occur in Taiwan proper and it's adjacent islands.

GENERAL VEGETATION (Fig. 1)

The climax vegetation of the island is coastal forest with the trees up to 20 meters high. The main tree components are *Hernandia sonora*, *Terminalia catappa*, *Ochrosia oppositifoia* and *Morinda citrifolia*. Some other less abundant tree species can be found, such as *Pisonia grandis*, *Calophyllum inophyllum*, *Pandanus tectorius*, *Cocos nocifera* and *Barringtonia asiatica*. The second story of the forest is rather scarce owing to the human disturbance. On the main forest floor are *Thuarea involuta*, *Stenotaphrum micranthum*, and *Cyperus javanicus*. Very few woody vine species such as *Caesalpinia bonduc* and *C. major* are amongst the thickets. The main shrubs such as *Scaevola sericea*, *Messerschmidia argentea* and *Guettarda speciosa* forming a brush that fences in the island.

The open beach surpports clumps of *Ipomoea pes-carpae* ssp. *brasiliensis*, *Thuarea involuta*, *Wedelia biflora* and *Sesuvium portulacastrum* and by scattered *Chamaesyce atoto*.

Due to human activities, one third of the island has been bady disturbed. The understory shrubs and forest floors are frequently cleared so that some regions become grassland with scattered trees. The scattered trees usually seen are *Morinda citrifolia*, *Scaevola serisea*, *Guettarda speciosa* and *Pipturus argenteus* while the main components of the grassland are *Tridax procumbens*, *Eragrostis amabilis*, *Phyla nodiflora*, *Stachytarpheta urticaefolia*, *Boeharvia diffusa*, *Sida rhombifolia*, *Panicum repens* and *Cyperus rotundus*.

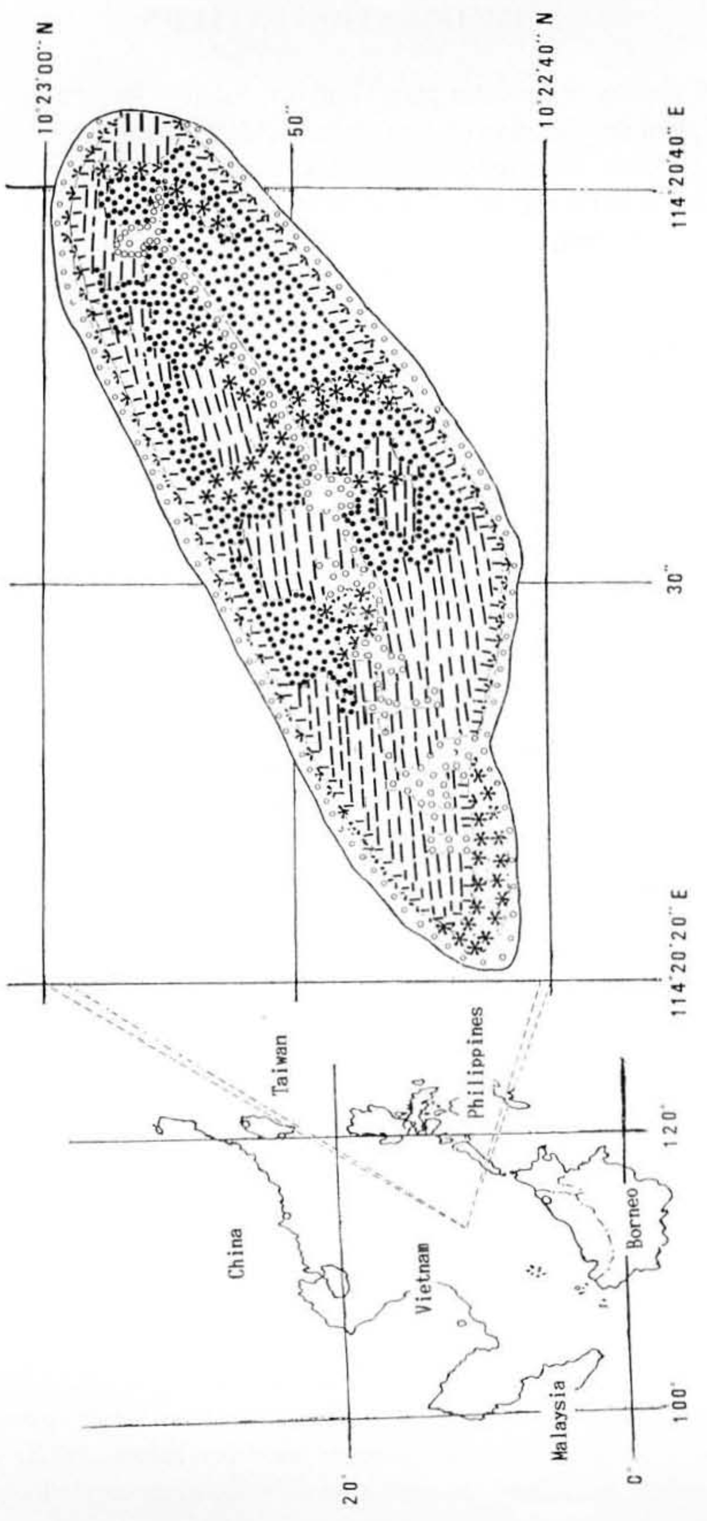

Fig. 1. Vegetation map of Taipingtao.
○ naked area; ∗ grassland; || brush; = scattered trees; ● coastal forest

IMMIGRATION PATTERN

A total of 109 species of vascular plants and one fungous species are recorded (checklist). According to the plant immigration pattern on this island, six kinds of immigrants can roughly be recognized as follows: 1)carried in by oceanic current; 2) carried in by birds; 3) carried in by wind; 4) species naturalized after introduction by man; 5) cultivated species planted by man; and 6) dispersal method unknown or carried by man unintentionally.

Plants dispersed by oceanic currents inhabit coastal area around the world and bear buoyant fruits or seeds such as *Hernandia sonora*, *Terminalia catappa* and *Barringtonia asiatica.* Plants dispersed by birds bear fleshy or sticky fruits such as *Pipturus argenteus*, *Pisonia grandis.* Plants dispersed by wind bear light seeds or spores such as *Psilotum nudum, Nephrolepis auriculata* and *Trametes orientalis.* Naturalized plants are those whose native habitats are not in tropical Asia. Plants are cultivated for their fruits or ornamentation. On the whole, 32 species are dispersed by oceanic currents; 6 species by birds; 5 species by wind; 39 species by unknown methods; 13 species are naturalized and 15 species are cultivated. (Table 1)

Table 1: The composition, immigration pattern and habits of vascular plants in Taipingtao.

TAXA		COMPOSITION			IMMIGRATION PATTERN						HABIT			
		FAMILY	GENUS	SPECIES	S	B	W	U	N	C	Tree	Shrub	Vine	Herb
PTERIDOPHYTES	a	2	2	3	0	0	3	0	0	0	0	0	0	0
	b	2	2	3	0	0	3	0	0	0	0	0	0	3
DICOTYLEDONS	a	36	68	82	28	6	1	22	11	14	13	20	12	37
	b	25	45	57	28	6	1	22	0	0	10	10	11	26
MONOCOTYLEDONS	a	7	22	24	4	0	0	17	2	1	2	0	0	22
	b	6	19	21	4	0	0	17	0	0	2	0	0	19
TOTAL	a	45	92	109	32	6	4	39	13	15	15	20	12	62
	b	33	66	81	32	6	4	39	0	0	12	10	11	48

a: total species; b: excluding naturalized and cultivated species.
B: birds; C: cultivated species; N: naturalized species; S: oceanic currents; U: unknown methods; W: wind.

FLORISTIC COMPOSITION

Eighty one species, excluding cultivated and naturalized species, belonging to 66 genera in 33 families are considered to be native plants. Among them, three species are Pteridophytes, 57 species belonging to 45 genera in 25 families are dicotyledons and 21 species belonging to 19 genera in 6 families, including one marine species, are monocotyledons.

The largest family of the vascular plants is the Gramineae (Poaceae) containing 13 species, the second Rubiaceae and Cyperaceae, each containing 4 species. The habits of the vascular plants are summarized as follows: 12 species are trees; 10 species are shrubs; 11 species are vines or lianas; 48 species are herbs. (Table 1)

DISTRIBUTION PATTERNS

The distribution patterns of the vascular plants are classified into 11 patterns, i.e. 1) Subtropical and warm temperate regions of the world, 2) tropics and subtropics of the world; 3) Pantropics; 4) Paleotropics; 5) Tropical Asia, Australia, Pacific islands and Indian islands; 6) Tropical Asia, Africa and Indian islands; 7) Tropical Asia and Africa; 8) Tropical Asia, Australia and Pacific islands; 9) Tropical Asia and Australia; 10) Tropical Asia and Pacific islands; 11) Tropical Asia.

The species are completely tropical but so widely distributed that some may extend to subtropical regions (Table 2). The significant elements are pantropical, paleotropical and from the region of tropical Asia, Australia and the Pacific islands.

Table 2: The distribution patterns of species of vascular plants in Taipingtao.

DISTRIBUTION PATTERN	TAXA AND IMMIGRATION TYPE												TOTAL
	PTERIDOPHYTES				DICOTYLEDONS				MONOCOTYLEDONS				
	B	S	W	M	B	S	W	M	B	S	W	M	
Subtropical regions								4				4	8
Tropic and subtropics			1									3	4
Pantropics			1			9		8					22
Paleotropics					1	5		4		1			11
Tropical Asia, Australia						5		1		1			7
Pacific Islands and Indian Island													
Tropical Asia, Africa and Pacific Islands										2		1	3
Tropical Asia and Africa							1						1
Tropical Asia, Australia and Pacific Islands					3	5				1			9
Tropical Asia and Australia						1		1				2	4
Tropical Asia and Pacific Island					1	3		1					5
Tropical Asia			1		1			3				2	7
TOTAL			3		6	28	1	22		5		17	81

B: birds; S: oceanic current; M: unknown methods; W: wind

ACKNOLEDGEMENTS

The botanical expedition was funded by the Council of Agriculture, Executive Yuan, R.O.China. Some specimens of Gramineae and Boraginaceae were determined by Drs J.F. Veldkamp and Ding Hou of the Rijksherbarium, Leiden, the Netherlands. The writers want to express their gratitude to them. They also thank Dr. Tung-Chu Liu of the Provincial Research Institute of Forestry, Taipei, for his determination of the fungus species.

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CHECK LIST OF PLANTS OF TAIPINGTAO

(*, a preceeding asterisk for plants of non-natives)

FUNGI

POLYPORACEAE

Trametes orientalis (Yasuda) Imazuki 東方木栓菌
Habitat: Epiphyte on decayed trunk of *Hernandia sonora* L.
Distribution: Japan, Continental China, Taiwan, Pacific islands.
Voucher: *T.C.Huang et al. 16508A*

PTERIDOPHYTA

OLEANDRACEAE

Nephrolepis auriculata (L.) Trimen in J. Linn. Soc. Bot. **24:** 152. 1887; DeVol & Kuo in Fl. Taiwan **1:** 320. *pl. 113*. 1975. 腎蕨
Habitat: Epiphyte on trunk in *Terminalia* forest.
Distribution: Tropical Asia.
Voucher: *T.C.Huang et al. 16477* .

Nephrolepis biserrata (Sw.) Schott, Gen. Fil. *pl. 3*. 1834; DeVol & Kuo in Fl. Taiwan **1:** 322. 1975. 長葉腎蕨
Habitat: Epiphyte on trunk in *Hernandia* forest.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16384, 16392.*

PSILOTACEAE

Psilotum nudum (L.) Beauv., Prodr. Fam. Aetheog. 112. 1805; DeVol & Kuo in Fl. Taiwan **1:** 25. *pl. 1*. 1975. 松葉蕨
Habitat: On roots in *Hernandia* and *Terminalia* forests.
Distribution: Tropics and subtropics.
Voucher: *T.C.Huang et al. 16404, 16447.*

DICOTYLEDONS

ACANTHACEAE

***Blechum pyramidatum** (Lam.) Urban. in Fedde Rep. **15:** 323. 1918; Hsieh & Huang in Fl. Taiwan **4:** 625. *pl. 1131*. 1978. 賽山藍
Habitat: Semi-open place in forest.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16351, 16443.*

AIZOACEAE

Sesuvium portulacastrum (L.) L., Syst. ed. 10. 1058. 1759; Liu & Chen in Fl. Taiwan **4:** 309. *pl. 307.* 1978. 海馬齒
Habitat: Open beach.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16397.*

AMARANTHACEAE

Achyranthes aspera L. var. **indica** L., Sp. Pl. 204.-A. 1753; Liu & Kao in Fl. Taiwan **2:** 365. *pl. 335*. 1976. 印度牛膝
Habitat: Open places.
Distribution: Eastern and south eastern Asia.
Voucher: *T.C.Huang et al. 16417, 16436, 16483.*

***Amaranthus viridis** L., Sp. Pl. 1405. 1763; Liu & Kao in Fl. Taiwan **2:** 374. 1976. 野莧
Habitat: Open places.
Distribution: Tropical America.
Voucher: *T.C.Huang et al. 16496.*

ANNONACEAE

***Annona squamosa** L., Sp. Pl. 537. 1753; Liu et al. Tr. Taiwan rev. ed. 126. 1988. 番荔枝
Habitat: Cultivated for its fruit.
Voucher: *T.C.Huang et al. 16421.*

APOCYNACEAE

***Nerium indicum** Mill., Gard. Dict. ed. 8. no. 2. 1768; Liu *et al.* Tr. Taiwan rev. ed. 713. 1988. 夾竹桃
Habitat: Cultivated as an ornamental.
Voucher: *T.C.Huang et al. 16510.*

Ochrosia oppositifolia (Lam.) K.Schum., in Engl. & Prantl., Pflanzenfam. IV. **2:** 156. *f. 57, k-m.* 1895; Walker, Fl. Okinawa Southern Ryuk. Isl. 849. 1976. 海檸檬
Habitat: Common in coastal forest.
Distribution: Tropical Asia, islands of Indian Ocean and Pacific Ocean.
Voucher: *T.C.Huang et al. 16359, 16439, 16450, 16462.*

ARALIACEAE

***Polyscias guilfoylei** (Cogn. & March.) Bailey in Rhodora **18:** 153. 1916; Liu *et al.* Tr. Taiwan rev. ed. 295. 1988. 福祿桐.
Habitat: Cultivated as an ornamental.
Voucher: *T.C.Huang et al. 16514.*

BORAGINACEAE

Ehretia resinosa Hance in J. Bot. **18:** 299. 1880; Hsiao in Fl. Taiwan **4:** 402. 1978. 恆春厚殼樹
Habitat: Open coastal forest.
Distribution: Taiwan, the Philippines.
Voucher: *T.C.Huang et al. 16356.*

Heliotropium indicum L., Sp. Pl. 130. 1753; Hsiao in Fl. Taiwan **4:** 403. 1978. 狗尾菜
Habitat: Open place.
Distribution: Tropical Asia, Africa, America.
Voucher: *T.C.Huang et al. 16499.*

Heliotropium ovalifolium Forssk. var. **depressum** (Cham.) Merr. in Philip. J. Sci. Bot. **9:** 134. 1914; Merr., Enum. Philip. Flower. Pl. **3:** 377. 伏毛天芹菜
Habitat: Open place.
Distribution: Tropical Asia, Africa, Australia and Pacific islands.
Voucher: *T.C.Huang et al. 16491.*

Messerschmidia argentea (L.) Johnston in J. Arnold. Arb. **16:** 164. 1935; Hsiao in Fl. Taiwan **4:** 404. 1978. 白水木
Habitat: Common tree on open beach.
Distribution: Tropical Asia, Australia, Madagascar, islands of Indian Ocean and Pacific Ocean.
Voucher: *T.C.Huang et al. 16396.*

CARICACEAE

***Carica papaya** L., Sp. Pl. 1036. 1753. 木瓜
Habitat: Cultivated for its fruit.
Voucher: *T.C.Huang et al. 16445.*

CASUARINACEAE

***Casuarina equisetifolia** Forst., Char. Gen. Pl. 104. 1776; Liu *et al*. Tr. Taiwan rev. ed. 359. 1988. 木麻黃
Habitat: Cultivated as an ornamental.
Voucher: *T.C.Huang et al. 16435.*

COMBRETACEAE

Terminalia catappa L., Mant. Pl. **1:** 128. 1767; Li & Lo in Fl. Taiwan 2nd ed. **3:** 935. 1993. 使君子
Habitat: Coastal forest.
Distribution: Tropical Old World.
Voucher: *T.C.Huang et al. 16442.*

COMPOSITAE (ASTERACEAE)

***Bidens pilosa** L., Sp. Pl. 832. 1753; Li in Fl. Taiwan **4:** 804. 1978. 三葉鬼針
Habitat: Open field.
Distribution: Native to North America, now pantropic.
Voucher: *T.C.Huang et al. 16455.*

Eclipta prostrata L., Mant. Pl. **2:** 286. 1771; Li in Fl. Taiwan **4:** 849. *pl. 1222.* 1978. 鱧腸
Habitat: Swampy open place near building.
Distribution: Warmer parts of the world.

Voucher: *T.C.Huang et al. 16489, 16517.*

***Synedrella nodiflora** (L.) Gaert., Fruct. et Sem. **2:** 456. *pl. 171. f. 7.* 1791; Li in Fl. Taiwan **4:** 947. *pl. 1257.* 1978 金箭腰

Habitat: Open field.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16429.*

***Tridax procumbens** L., Sp. Pl. 900. 1753; Li in Fl. Taiwan **4:** 953. *pl. 1260.* 1978. 長柄菊

Habitat: Open field.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16380.*

Vernonia cinerea (L.) Less. in Linnaea **4:** 291. 1829; Li in Fl. Taiwan **4:** 955. *pl. 1261.* 1978. 一枝香

Habitat: Semi-open field.
Distribution: Tropical Asia, Africa.
Voucher: *T.C.Huang et al. 16475.*

Wedelia biflora (L.) DC. in Wright, Contr. Bot. Ind. 18. 1834; Li in Fl. Taiwan **4:** 959. 1978. 雙花蟛蜞菊

Habitat: Open beach.
Distribution: Tropical Asia, Australia, islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16354.*

CONVOLVULACEAE

***Ipomoea aquatica** Forsk., Fl. Aegyp. Arb. 44. 1775; Chang in Fl. Taiwan **4:** 363. 1978. 空心菜

Habitat: Cultivated as vegetable.
Voucher: *T.C.Huang et al. 16490.*

Ipomoea gracilis R. Br., Prodr. 484. 1810; Chang in Fl. Taiwan **4:** 366. *pl. 1042.* 1978. 海牽牛

Habitat: Open beach or hanging on coastal trees.
Distribution: Tropical Asia, Madagascar, Australia, islands of Indian Ocean and Pacific Ocean.
Voucher: *T.C.Huang et al. 16403, 16411, 16493.*

Ipomoea obscura (L.) Ker-Gawl. in Bot. Reg. **3:** *pl. 239.* 1817; Chang in Fl. Taiwan **4:** 369. 1978. 野牽牛

Habitat: Open field near building.
Distribution: Tropical Asia, Africa, Australia.
Voucher: *T.C.Huang et al. 16415.*

Ipomoea pes-caprae (L.) Sweet subsp. **brasiliensis** (L.) Ooststr. in Blumea **3:** 533. 1940; Chang in Fl. Taiwan **4:** 371. *pl. 1043.* 1978. 馬鞍藤
Habitat: Open beach.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16393, 16422.*

***Ipomoea triloba** L., Sp. Pl. 161. 1753; Chang in Fl. Taiwan **4:** 378. *pl. 1048.* 1978. 紅花野牽牛
Habitat: Open field near building.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16446.*

Ipomoea tuba (Schlecht.) G. Don, Gen. Syst. **4:** 271. 1838; Chang in Fl. Taiwan **4:** 378. 1978. 圓萼天茄兒
Habitat: Open beach and hanging on coastal trees.
Distribution: Tropical Asia, Africa, America, islands of Indian Ocean and Pacific Ocean.
Voucher: *T.C.Huang et al. 16360.*

CUCURBITACEAE

***Luffa cylindrica** (L.) Roem., Fam. **2:** 64. 1846; Chakravarty, Monogr. Ind. Cucurbit. 75. 1959. 絲瓜
Habitat: Cultivated as vegetable.
Voucher: *T.C.Huang et al. 16468.*

EUPHORBIACEAE

Acalypha boehmerioides Miq., Fl. Ind. Bat. Suppl. **1:** 459. 1855; Baker & van den Brink in Fl. Java **1:** 450. 1963. 苧麻葉鐵莧
Habitat: Open field.
Distribuiton: Java, Islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16476.*

Acalypha indica L., Sp. Pl. 1030. 1753; Hsieh *et al.* in Fl. Taiwan 2nd ed. **3:** 421. 1993. 印度鐵莧

Habitat: Open field.
Distribution: Tropical Asia, Africa, Madagascar and Pacific islands.
Voucher: *T.C.Huang et al. 16378.*

Chamaesyce atoto (Forst. f.) Croizat in Degener, Fl. Hawaii Fam. 190. 1936; Lin *et al*. in Fl. Taiwan 2nd ed. **3:** 433. *pl. 224*. 1993. 濱大戟
Habitat: Common on open beach.
Distribution: Tropical Asia, Australia and Pacific islands.
Voucher: *T.C.Huang et al. 16374, 16394.*

Chamaesyce hirta (L.) Millsp. in Publ. Field Columbian Mus., Bot. Ser. **2:** 303. 1909; Lin *et al.* in Fl. Taiwan 2nd ed. **3:** 436. *pl. 226.* 1993. 大飛揚草
Habitat: Open field.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16381, 16407, 16452.*

Chamaesyce prostrata (Ait.) Small, Fl. SE. U.S. 713; 1903; Lin *et al.* in Fl. Taiwan 2nd ed. **3:** 442. *pl. 231.* 1993. 匍匐大戟
Habitat: Open field.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16367, 16495, 16513.*

Chamaesyce thymifolia (L.) Millsp. Publ. Field Columbian Mus., Bot. ser. **2:** 412. 1909; Lin *et al.* in Fl. Taiwan 2nd ed. **3:** 448. *pl. 235.* 1993. 小飛揚草
Habitat: Open field.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16382, 16441, 16512.*

Fluegga virosa (Roxb. *ex* Willd.) Voigt, Hort. Suburb. Calcut. 52. 1845; Deng & Wang in Fl. Taiwan 2nd ed. **3:** 472. 1993. 白飯樹
Habitat: Open field near building.
Distribution: Tropical Old World.
Voucher: *T.C.Huang et al. 16466.*

Phyllanthus urinaria L., Sp. Pl. 982. 1753; Deng & Wang in Fl. Taiwan 2nd ed. **3:** 498. *pl. 260.* 1993. 葉下珠
Habitat: Open field.
Distribution: Native to tropical Asia.
Voucher: *T.C.Huang et al. 16379, 16480.*

*__Ricinus communis__ L., Sp. Pl. 1007. 1753; Hsieh *et al*. in Fl. Taiwan 2nd ed. **3:** 500. 1993. 蓖麻

Annex 254

Habitat: Open field.
Distribution: Native to Africa, now a pantropical weed.
Voucher: *T.C.Huang et al. 16371.*

GOODENIACEAE

Scaevola sericea Vahl, Symb. Bot. **2:** 37. 1791; Li in Fl. Taiwan **4:** 765. *pl. 1194*. 1978. 草海桐
Habitat: Open beach.
Distribution: Tropical Asia, Australia, Madagascar, islands of Indian Ocean and Pacific Ocean.
Voucher: *T.C.Huang et al. 16353*.

GUTTIFERAE (CLUSIACEAE)

Calophyllum inophyllum L., Sp. Pl. 513. 1753; Robson in Fl. Taiwan **2:** 621. *pl. 427.* 1976. 瓊崖海棠
Habitat: Coastal forest.
Distribution: Tropical Old World and islands of Indian Ocean and Pacific Ocean.
Voucher: *T.C.Huang et al. 16386, 16418.*

HERNANDIACEAE

Hernandia sonora L., Sp. Pl. 981. 1753; Li in Fl. Taiwan **2:** 469. *pl. 377.* 1976. 蓮葉桐
Habitat: Common in coastal forest.
Distribution: Tropical Old World and islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16401*.

LABIATAE (LAMIACEAE)

***Ocimum basilicum** L., Sp. Pl. 597. 1753; Huang & Cheng in Fl. Taiwan **4:** 491. *pl. 1080.* 1978. 九層塔
Habitat: Cultivated for spice.
Voucher: *T.C.Huang et al. 16467*.

LAURACEAE

Cassytha filiformis L., Sp. Pl. 35. 1753; Chang in Fl. Taiwan **2:** 409. 1976. 無根藤
Habitat: Open beach and also hanging on coastal tree.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16387.*

LECYTHIDACEAE

Barringtonia asiatica (L.) Kurz. in J. Asiat. Soc. Beng. **45:** 131. 1876; Li & Lo in Fl. Taiwan 2nd ed. **3:** 901. *pl. 449.* 1993. 棋盤腳樹
Habitat: Coastal forest.
Distribution: Tropical Asia, Australia, islands of Pacific Ocean and Indian Ocean.
Voucher: *T.C.Huang et al. 16515.*

LEGUMINOSAE (FABACEAE)

Alysicarpus vaginalis (L.) DC., Prodr. 2: 353. 1825; Huang & Ohashi in Fl. Taiwan 2nd ed. **3:** 196. *pl. 87.* 1993. 煉莢豆
Habitat: Open field.
Distribution: Tropical Old World.
Voucher: *T.C.Huang et al. 16448.*

Caesalpinia bonduc (L.) Roxb., Fl. Ind. ed. 2. **2:** 362. 1832; Huang & Ohashi in Fl. Taiwan 2nd ed. **3:** 177. *pl. 80.* 1993. 老虎心
Habitat: Open coastal forest.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16412.*

Caesalpinia major (Medik.) Dandy & Exell in J. Bot. **76:** 180. 1938; Wagner *et al.*, Man. Flower. Pl. Hawaii **1:** 648. 1990. 蓮實藤
Habitat: Open coastal forest.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16440.*

Canavalia cathartica Thou. in Desv. J. Bot. **1:** 81. 1813; Huang & Ohashi in Fl. Taiwan 2nd ed. **3:** 210. 1993. 小果刀豆
Habitat: Open beach and hanging on coastal shrubs.
Distribution: Tropical Old World and islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16361, 16390, 16520.*

***Desmodium scorpiurus** (Sw.) Desv. in J. Bot. **1:** 122. 1813; Huang & Ohashi in Fl. Taiwan 2nd ed. **3:** 265. *pl. 128*. 1993. 蝦尾葉山螞蝗
Habitat: Open garden field.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16463.*

Erythrina variegata L., Stickm. Herb. Amb. 101. 1754; Huang & Ohashi in Fl. Taiwan 2 nd ed. **3:** 279. *pl. 138*. 1993. 刺桐
Habitat: Open coastal forest.
Distribution: Tropical Asia and Pacific islands.
Voucher: *T.C.Huang et al. 16416.*

***Leucaena leucocephala** (Lam.) de Wit in Taxon **10:** 54. 1961; Huang & Ohashi in Fl. Taiwan 2nd ed. **3:** 171. 1993. 銀合歡
Habitat: Open field.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16391, 16458.*

***Mimosa pudica** L., Sp. Pl. 518. 1753; Huang & Ohashi in Fl. Taiwan 2nd ed. **3:** 172. 1993. 含羞草
Habitat: Open field.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16479.*

Senna tora (L.) Roxb., Fl. Ind. ed. 2. **2:** 340. 1832; Huang & Ohashi in Fl. Taiwan 2nd ed. **3:** 186. 1993. 決明
Habitat: Open field.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16434, 16481.*

Sophora tomentosa L., Sp. Pl. 373. 1753; Huang & Ohashi in Fl. Taiwan 2nd ed. **3:** 367. *pl. 191.* 1993. 毛苦蔘
Habitat: Open beach.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16424.*

Vigna adenantha (G.F.Meyer) Marechal et al. in Taxon **27:** 202. 1978; Huang & Ohashi in Fl. Taiwan 2nd. ed. **3:** 384. 1993. 腺藥豇豆
Habitat: Open field and hanging on shrub.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16437, 16471.*

Vigna marina (Burm.) Merr., Interpret. Herb. Amb. 285. 1917; Huang & Ohahsi in Fl. Taiwan 2nd ed. **3:** 385. *pl. 201*. 1933. 濱豇豆
Habitat: Open beach and open field.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16385.*

MALVACEAE

***Malvastrum coromandelianum** (L.) Garcke in Bonplandia **5:** 297. 1857; Chang in Fl. Taiwan 2nd ed. **3:** 745. *pl. 374.* 1993. 賽葵
Habitat: Open field near building.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16365.*

Sida rhombifolia L., Sp. Pl. 1753; Chang in Fl. Taiwan 2nd. ed. **3:** 748. 1993. 金午時花
Habitat: Epiphytic in open coastal forest and semi-open field.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16355, 16406.*

Sida veronicaefolia Lam. Encycl. **1:** 5. 1783; Chang in Fl. Taiwan 2nd. ed. **3:** 750. 1993. 澎湖金午時花
Habitat: Open field.
Distribution: Tropical Asia.
Voucher: *T.C.Huang et al. 16488.*

MELIACEAE

***Aglaia formosana** Hayata, Icon. Pl. Form. **3:** 52. 1913; Chang in Fl. Taiwan 2nd. ed. **3:** 552. *pl. 284.* 1993. 紅柴
Habitat: Cultivated as an ornamental.
Voucher: *T.C.Huang et al. 16368.*

MORACEAE

Ficus microcarpa L. f., Suppl. Sp. Pl. 442. 1781; Liu & Liao in Fl. Taiwan **2:** 139. 1976. 榕樹
Habitat: In the edge of coastal forest near building.
Distribution: Tropical Asia, Australia, New Caledonia.
Voucher: *T.C.Huang et al. 16438.*

MYRTACEAE

***Psidium guajava** L., Sp. Pl. 470. 1753; Liu *et al.*, Tr. Taiwan 545. 1988. 番石榴
Habitat: Cultivated for its fruit.
Voucher: *T.C.Huang et al. 16432.*

***Syzygium samarangense** (Blume) Merr. & Perry in J. Arn. Arb. **19:** 115. 1938; Liu *et al.*, Tr. Taiwan 550. 1988. 蓮霧
Habitat: Cultivated for its fruit.
Voucher: *T.C.Huang et al. 16497.*

NYCTAGINACEAE

Boerhavia diffusa L., Sp. Pl. **1:** 3. 1753; Liu in Fl. Taiwan **2:** 297. *pl. 301*. 1976. 黃細心
Habitat: Open field.
Distribution: Tropical Asia, Australia and Pacific islands.
Voucher: *T.C.Huang et al. 16358, 16408, 16486.*

***Bougainvillea brasiliensis** Raeusch, Nom. ed. 3. 112. 1797; Liu *et al.* Tr. Taiwan 411. rev. ed. 1988. 九重葛
Habitat: Cultivated as an ornamental.
Voucher: *T.C.Huang et al. 16469.*

Pisonia grandis R. Br., Prodr. 422. 1810. 白避霜花
Habitat: Open coastal forest.
Distribution: Tropical Asia, islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16413, 16428.*

PORTULACACEAE

Portulaca oleracea L., Sp. Pl. 445. 1753; Liu & Chen in Fl. Taiwan **2:** 316. *pl. 310.* 1976. 馬齒莧
Habitat: Open field.
Distribution: All warmer areas.
Voucher: *T.C.Huang et al. 16388, 16430.*

RHAMNACEAE

Colubrina asiatica (L.) Brongn. in Ann. Sci. Nat. **1**(10): 369 1827; Liu *et al.* in Fl. Taiwan 2nd ed. **3:** 684. *pl. 353*. 1993. 亞洲濱棗
Habitat: Open beach.
Distribution: Old World and islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16409.*

RUBIACEAE

Dentella repens (L.) Forst., Char. Gen. 26. *pl. 13*. 1776; Chao in Fl. Taiwan **4:** 258. 1978. 小牙草
Habitat: Open field.
Distribution: Asia and Australia.
Voucher: *T.C.Huang et al. 16350.*

Guettarda speciosa L., Sp. Pl. 991. 1753; Chao in Fl. Taiwan **4:** 269. *pl. 996*. 1978. 葛塔德木
Habitat: Coastal forest.
Distribution: Tropical Asia, Australia and islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16357, 16485.*

Hedyotis corymbosa (L.) Lam., Tabl. Encycl. **1:** 27. 1791; Chao in Fl. Taiwan **4:** 272. 1978. 繖花龍吐珠
Habitat: Open field.
Distribution: Tropical Asia, Africa and America.
Voucher: *T.C.Huang et al. 16352.*

Morinda citrifolia L., Sp. Pl. 176. 1753; Chao in Fl. Taiwan **4:** 307. 1978. 檄樹
Habitat: Coastal forest and open beach.
Distribution: Tropical Asia, Australia and islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16369, 16420.*

RUTACEAE

***Citrus grandis** Osbeck, Dagbok. Ostind. Resa. 98. 1756; Liu et al., Tr. Taiwan rev. ed. 639. 1988. 柚子
Habitat: Cultivated for its fruit.
Voucher *T.C.Huang et al. 16431.*

***Citrus limon** Burm. f. Fl. Ind. 173. 1768; Liu *et al*. Tr. Taiwan rev. ed. 639. 1988. 檸檬
Habitat: Cultivated for its fruit.
Voucher: *T.C.Huang et al. 16433.*

SOLANACEAE

***Capsicum annum** L., Sp. Pl. 188. 1753. 朝天椒
Habitat: Cultivated for spice.
Voucher: *T.C.Huang et al. 16474.*

***Physalis angulata** L., Sp. Pl. 183. 1753; Liu & Ou in Fl. Taiwan **4:** 535. *pl. 1095*. 1978. 燈籠草
Habitat: Open field.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16395, 16454.*

Solanum nigrum L., Sp. Pl. 186. 1753; Liu & Ou in Fl. Taiwan **4:** 544. 1978. 龍葵
Habitat: Open field.
Distribution: All tropical and temperate regions.
Voucher: *T.C.Huang et al. 16500, 16504.*

TILIACEAE

Corchorus aestuans L., Syst. ed. 10. 1079. 1774; Chang in Fl. Taiwan 2nd ed. **3:** 724. 1993 繩黃麻
Habitat: Open field.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16364, 16518.*

Triumfetta procumbens Forst. f., Fl. Ins. Austr. Prodr. 35. 1786. 匍匐垂桉草
Habitat: Open field and beach.
Distribution: Tropical Asia, islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16410, 16482.*

URTICACEAE

Pipturus argenteus (Forst. f.) Wedd. in DC., Prodr. **16:** 235. 1869. 銀背落尾麻
Habitat: Open coastal forest.
Distribution: Tropical Asia, Australia and islands of Pacific Ocean.

Voucher: *T.C.Huang et al. 16372, 16400, 16419.*

VERBENACEAE

Phyla nodiflora (L.) Greene in Pittonia **4:** 46. 1899; Hsiao in Fl. Taiwan **4:** 427. 1978. 過江藤
Habitat: Open field.
Distribution: Warmer regions of the world.
Voucher: *T.C.Huang et al. 16402, 16423.*

Premna obtusifolia R. Brown, Prodr. Fl. Nov. Holland. 512. 1810; Hsiao in Fl. Taiwan **4:** 428. 1978. 臭娘子
Habitat: Open coastal forest.
Distribution: Tropical Asia, Australia.
Voucher: *T.C.Huang et al. 16426.*

***Stachytarpheta urticaefolia** (Salisb.) Sims., Bot. Mag. *pl. 1848.* 1916. 藍蝶猿尾木
Habitat: Open field.
Distribution: Native to tropical Asia, now pantropics.
Voucher: *T.C.Huang et al. 16349, 16427.*

VITACEAE

Cayratia trifolia (L.) Domin 三葉烏斂梅
Habitat: Edge of coastal forest.
Distribution: Tropical Asia, Australia and islands of Pacific Ocean.
Voucher *T.C.Huang et al. 16414, 16464.*

MONOCOTYLEDONS

ARACEAE

Typhonium divaricatum (L.) Decne. in Nouv. Ann. Mus. Paris **31:** 367. 1834; Liu & Huang in Fl. Taiwan **5:** 815. *pl. 1530.* 1978. 土半夏
Habitat: Shaded place near building.
Distribution: Eastern Asia, Borneo, Malaysia.
Voucher: *T.C.Huang et al. 16503.*

CYPERACEAE

Cyperus compressus L., Sp. Pl. 46. 1753; Koyama in Fl. Taiwan **5:** 269. 1978. 扁穗莎草
Habitat: Open field.
Distribution: Warm regions of the world.
Voucher: *T.C.Huang et al. 16376, 16494, 16502.*

Cyperus rotundus L., Sp. Pl. 45. 1753; Koyama in Fl. Taiwan **5:** 265. 1978. 香附子
Habitat: Open field beside building.
Distribution: Tropical to temperate regions of the world.
Voucher: *T.C.Huang et al. 16383*.

Fimbristylis cymosa R. Br., Prodr. Fl. Nov. Holl. 228. 1810; Koyama in Fl. Taiwan **5:** 232. *pl. 1327*. 1978. 乾溝飄拂草
Habitat: Open field.
Distribution: Tropical and subtropical regions of the world.
Voucher: *T.C.Huang et al. 16506*.

Mariscus javanicus (Houtt.) Merr. & Metcalfe in Lingn. Sci. J. **21:** 4. 1945; Koyama in Fl. Taiwan **5:** 284. 1978. 羽狀穗磚子苗
Habitat: Open field and coastal forest.
Distribution: Tropical Asia, Africa, Hawaiian Islands.
Voucher: *T.C.Huang et al. 16366, 16398.*

GRAMINEAE (POACEAE)

Brachiaria subquadripara (Trin.) Hitchc. in Lign. Sci. J. **7:** 214. 1931; Hsu in Fl. Taiwan **5:** 533. 1978. 四生臂形草
Habitat: Open field and semi-open field.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16451, 16461, 16473, 16501*.

*__Cenchrus echinatus__ L., Sp. Pl. 1050. 1753; Hsu in Fl. Taiwan **5:** 535. *pl. 1424*. 1978. 疾藜草
Habitat: Open field.
Distribution: Native to tropical America.
Voucher: *T.C.Huang et al. 16348*.

Chloris barbata Sw., Fl. Ind. Occ. **1:** 200. 1797; Hsu in Fl. Taiwan **5:** 462. *pl. 1396*. 1978. 孟仁草
Habitat: Open field.

Distribution: Pantropics.
Voucher: T.C.Huang et al. 16377, 16459.

Cynodon dactylon (L.) Pers., Syn. Pl. **1:** 85. 1805; Hsu in Fl. Taiwan **5:** 466. *pl. 1397.* 1978. 狗牙根
Habitat: Open field.
Distribution: All warmer regions of the world.
Voucher: *T.C.Huang et al. 16465.*

Dactyloctenium aegyptium (L.) Beauv., Ess. Agrost. 15. 1812; Hsu in Fl. Taiwan **5:** 471. *pl. 1399.* 1978. 龍爪茅
Habitat: Open field beside building.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16460.*

Digitaria setigera R. & S. var. **calliblepharata** (Henr.) Veldk. in Blumea **21:** 36. *fig. 6a.* 1973. 毛短穎馬唐
Habitat: Edge of coastal forest.
Distribution: Tropical Asia.
Voucher: *T.C.Huang et al. 16478, 16498, 16516.*

Digitaria setigera R. & S., Syst. Veg. **2:** 474. 1817. 短穎馬唐
Habitat: Open field.
Distribution: All warmer region of the world.
Voucher: *T.C.Huang et al. 16444, 16470, 16472.*

Eleusine indica (L.) Gaertn., Fruct. **1:** 8. 1789; Hsu in Fl. Taiwan **5:** 475. *pl. 1401.* 1978. 牛筋草
Habitat: Open field.
Distribution: Tropical and subtropical regions of the world.
Voucher: *T.C.Huang et al. 16389.*

Eragrostis amabilis (L.) Wight & Arn. *ex* Nees in Hook. & Arn., Bot. Beechey Voy. 251. 1838; Hsu in Fl. Taiwan **5:** 478. *pl. 1402.* 1978. 鯽魚草
Habitat: Open field.
Distribution: Pantropics.
Voucher: *T.C.Huang et al. 16370, 16484, 16507.*

Panicum repens L., Sp. Pl. ed. 2. 87. 1762; Hsu in Fl. Taiwan **5:** 577. 1978. 舖地黍
Habitat: Open beach.
Distribution: Tropical and subtropical regions of the world.
Voucher: *T.C.Huang et al. 16373.*

***Pennisetum setosum** (Sw.) L. C. Rich. in Pers. Syn. Pl. **1:** 72. 1805; Hsu in Fl. Taiwan **5:** 592. 1978. 牧地狼尾草
Habitat: Open field.
Distribution: Native to tropical America and Africa.
Voucher: *T.C.Huang et al. 16505.*

Soghum nitidum (Vahl) Pers., Syn. Pl. **1:** 101. 1805; Hsu in Fl. Taiwan **5:** 695. *pl. 1479.* 1978. 光葉高粱
Habitat: Open field.
Distribution: Tropical Asia, Australia.
Voucher: *T.C.Huang et al. 16492.*

Sporobolus diander (Retz.) Beauv., Ess. Agrost. 26, 147, 178. 1812; Hsu in Fl. Taiwan **5:** 501. *pl. 1410.* 1978. 雙蕊鼠尾粟
Habitat: Open field.
Distribution: Tropical Asia, Australia.
Voucher: *T.C.Huang et al. 16425, 16511.*

Stenotaphrum micranthum (Desv.) C. E. Hubb. in Hubb. & Vaughan, Gr. Maurit & Rodr. 73. 1940 窄溝草
Habitat: Coastal forest.
Distribution: Tropical Africa, Asia, Pacific islands.
Voucher: *T.C.Huang et al. 16362, 16405.*

Thuarea involuta (Forst.) R. Br. ex Roem. & Schult., Syst. Veg. **2:** 808. 1817; Hsu in Fl. Taiwan **5:** 612. *pl. 1452.* 1978. 芻蓄草
Habitat: Open beach.
Distribution: Tropical Asia, Australia, Madagascar, islands of Pacific Ocean and Indian Ocean.
Voucher: *T.C.Huang et al. 16363, 16399, 16449.*

HYDROCHARITACEAE

Thalassia hemprichii (Ehrenb.) Aschers. in Petermann's Mitt. **17:** 242. 1871; Yang in Fl. Taiwan **5:** 22. 1978. 泰來藻
Habitat: Submersed in shallow sea water.
Distribution: Tropical Asia, Africa and islands of Pacific Ocean.
Voucher: *T.C.Huang et al. 16508, 16509, 16521.*

MUSACEAE

***Musa sapientum** L., Syst. ed. 10. 1303. 1759. 香蕉
Habitat: Cultivated for its fruit.
Voucher: *T.C.Huang et al. 16453, 16522.*

PALMAE (ARECACEAE)

Cocos nucifera L., Sp. Pl. 1181. 1753. 可可椰子
Habitat: Open beach, also cultivated.
Distribution: Paleotropic.
Voucher: *T.C.Huang et al. 16456.*

PANDANACEAE

Pandanus tectorius Sol. in Parkins J. Voy. H.M.S. Endeav. 46. 1773. 林投
Habitat: Open coastal forest.
Distribution: Tropical Asia, Australia, Pacific islands.
Voucher: *T.C.Huang et al. 16487, 16519.*

太平島植物相

黃增泉, 黃星凡, 楊國禎

摘　　　要

本文係國內外植物界首次報導太平島植物相. 太平島屬於南沙群島中之最大島, 面積約0.46平方公里, 位於菲律賓, 婆羅洲, 及中南半島之間. 全島之植被以熱帶海岸林爲主, 高大而鬱閉, 主要組成種類有蓮葉桐(*Hernandia sonora*), 欖仁樹(*Terminalia catappa*), 海檸檬(*Ochrosia oppositifolia*), 橄樹(*Morinda citrifolia*), 草海桐(*Goodenia sericea*)及白水木(*Messershmidia argentea*)等. 本島共有109種維管束植物及一種菌菇, 其中82種認爲是原生植物, 屬熱帶成份, 大部份靠洋流移入本島. 本島共有9種維管束植物不見於台灣本島及其附近小島, 包括海檸檬, 苧麻葉鐵莧(*Acalypha boehmerioides*), 蓮實藤(*Caesalpinia major*), 匍匐垂桉草(*Triumphetta procumbens*), 銀背落尾麻(*Pipturus argenteus*), 三葉烏斂梅 (*Cayratia trifolia*), 毛 短 穎 馬 唐 (*Digitaria setigera* var. *callibleoharata*), 窄 溝 草 (*Stenotaphrum micranthum*), 林投(*Pandanus tectorius*)等. 本島植被景況頗類似民國43年前之蘭嶼. 本島可成爲自然海洋島嶼國家公園之極佳場所. 感謝行政院農委會漁業處之經費及交通支援, 而得以完成本文.

Annex 255

Zhiguo Gao, "The South China Sea: From Conflict to Cooperation?", *Ocean Development and International Law*, Vol. 25, No. 3 (1994)

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The South China Sea: From Conflict to Cooperation?

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This article provides a comprehensive review of the latest developments with respect to the Spratly Islands disputes in the South China Sea. By studying the national policies behind the evolution of these events it examines in particular some of their implications on regional relations and the future of the South China Sea, with special emphasis on China's policy toward the issue.

Following the cold war, the world generally has been moving in a direction of peace and cooperation. However, there are exceptions to this favorable development. A particular area for potential conflict is the South China Sea, one of the largest marginal seas of the oceans and some of the most troubled waters in the world. This article first reviews the latest developments with respect to the Spratly Islands disputes in the South China Sea, and then attempts to articulate some of their implications on regional relations and the future of the South China Sea, with particular emphasis on China's policy toward the disputes.

Recent Developments in the South China Sea

Historically, there have been few territorial disputes between the coastal states in the South China Sea except for foreign occupations of some of the islands during World War II. The contest for the South China Sea is of relatively recent origin. Motivated by their security concerns and economic interests, the coastal states have made frequent claims of sovereignty over the South China Sea islands since the late 1960s and early 1970s. These overlapping claims—which mushroomed after the Vietnam War, persisted throughout the 1980s, and escalated after the resolution of the Cambodia issue—eventually have culminated in today's military partition of the Spratly Islands archipelago.

A detailed historical examination of the history of the South China Sea disputes has been well covered elsewhere and transcends the scope of this article.[1] Rather, the following discussion provides a brief review of the latest developments in the region.

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Military Occupation of the Spratly Islands

Although the disputes over ownership of the Paracel and Spratly Islands archipelagoes have their roots in history back to time immemorial, the battle to control these islands did not begin until the Vietnam War had wound down and the first oil crisis had shocked the world. The South China Sea has since become some of the most troubled waters in the world.

Currently six states and parties claim title to all or part of the South China Sea islands. China, both mainland and Taiwan, and Vietnam have claimed the whole of the Paracel and Spratly Islands archipelagoes as their territory. The Philippines, Malaysia, and Brunei also have made claims (all of which are of recent origin) to a portion of the Spratly Islands. All but Brunei have maintained a military presence in the Spratly Islands archipelago.[2]

Taiwan has occupied the largest island of the Spratly Islands group, Itu Aba (Taiping Tao, in Chinese), since the end of World War II, and a force of 600 troops has been maintained on the island. China sent its marines to garrison six islets, including Fiery Cross Reef, Johnson Reef, Collins Reef, and Gaven Reef (Yongshu Jiao, Chigua Jiao, Guihan Jiao, and Nanxuen Jiao, in Chinese, respectively), after a brief military clash with Vietnam on March 14, 1988. It also landed troops on at least one more atoll in the Spratly group in 1992. Currently, China has a total of 260 troops stationed on these islets.[3]

Moreover, in 1992 China passed its first territorial sea and contiguous zone act to legalize its claim. Article 2 of this law effectively defines the Paracel and Spratly Islands archipelagoes as China's territory.[4] A few remarks on the Chinese maritime boundary claim in the South China Sea are necessary since there is some misunderstanding of this line and the newly promulgated territorial sea law by a number of outside observers who believe that China claims virtually the whole area as its territorial waters.

A boundary line encompassing most of the waters of the South China Sea can be found in all modern Chinese maps (see Figure 1). The line is referred to in Chinese literature as the "traditional maritime boundary line," "the southernmost frontier," "territorial limit," and so forth, but the legal nature of the line seldom has been clarified. A careful study of Chinese documents[5] reveals that China never has claimed the entire water column of the South China Sea, but only the islands and their surrounding waters within the line. Thus the boundary line on the Chinese map is merely a line that delineates ownership of islands rather than a maritime boundary in the conventional sense.

Vietnam began to take possession of the Spratly Islands in 1975, when it took 13 islands in the Spratly Islands group. It occupied 3 more islands—Prince of Wales Bank, Vanguard Bank, and Bombay Cay (Guangya Tan, Wanan Tan, and Pengbobao Jiao, in Chinese, respectively)—in September 1989,[6] and took at least 5 more atolls thereafter. At present, Vietnam has 600 soldiers deployed on these islands.[7]

The Philippines began to annex the Spratly Islands in 1970 and has stationed over 480 marines on nine of them.[8] The islands are fortified with heavy artillery, and have radar, a weather station, and ammunition storage.

Malaysia is chronologically the last claimant by virtue of military occupation. It landed troops on Swallow Reef in late 1977 and now occupies 3 of the 12 islets claimed by it, with a total force of 70 troops.[9]

Brunei is the only claimant who does not have a military presence in the Spratly Islands. In fact, Louisa Reef, claimed by Brunei, already has been taken by Malaysia.

The military occupation of the Spratly Islands is summarized in Table 1. As is clear

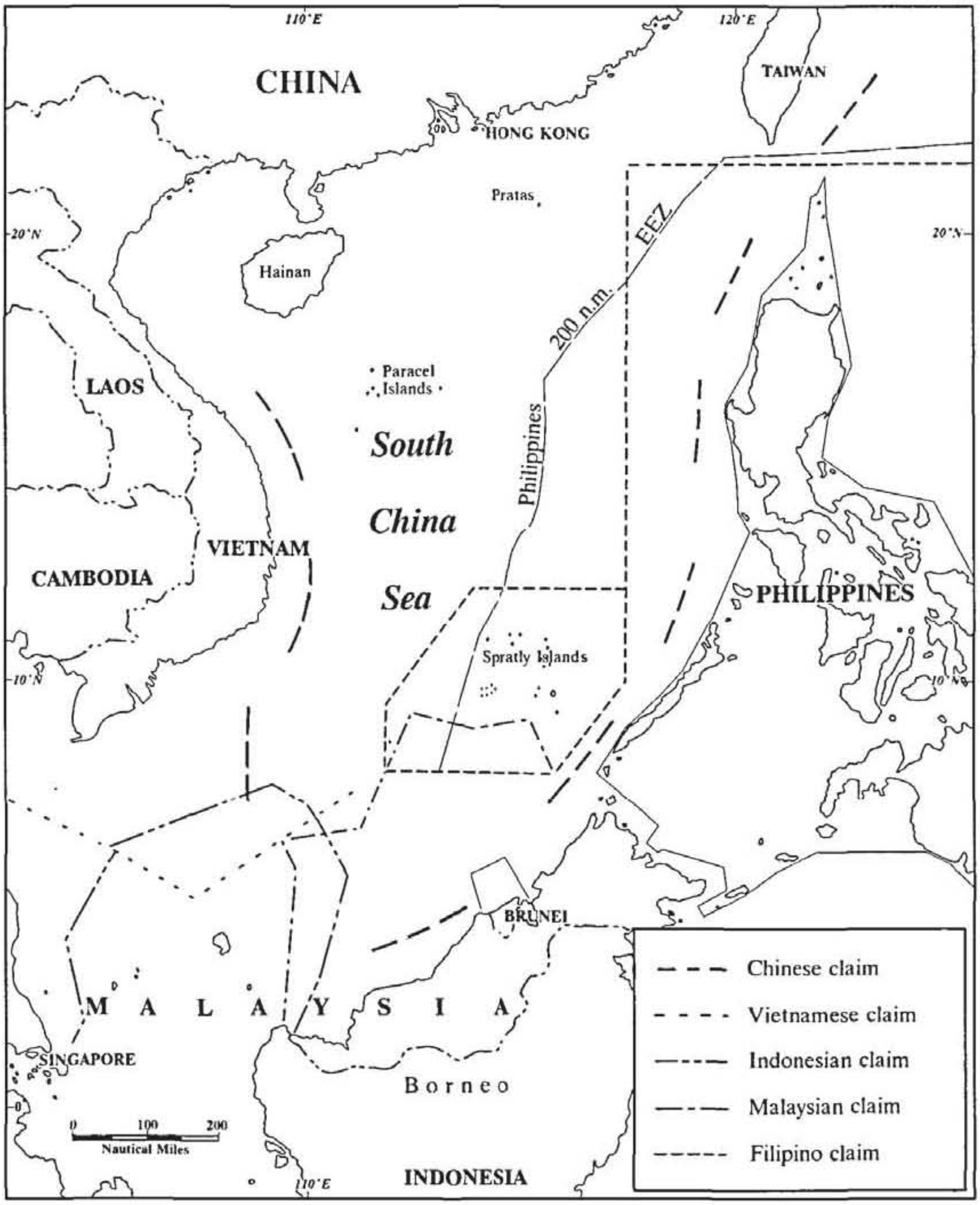

Figure 1. Unilateral claims in the South China Sea.

from the table, at least 42 of the 51 major islands in the Spratly Islands group have been occupied by the claimants.

Regional Arms Buying Spree

In order to back up their territorial claims and military occupation, and perhaps to enhance bargaining positions in future negotiations, the coastal states of the South China Sea in general and the claimant states in particular have actively engaged in building up their military forces, particularly their naval and air force capabilities.

Table 1
Military Occupation of the Spratly Islands

Country	Beginning of Occupation	Number of Islands	Number of Troops
China			
Mainland	1988	9	260
Taiwan	1945	1	600
Vietnam	1975	21	600
Philippines	1970	8	480
Malaysia	1977	3	70
Brunei		0	0
Total		42	2,010

Source: Compiled by the author.

As its economy grew, China began to increase its military spending. Its defense budget rose 15 percent in 1991 and 12 percent in 1992 to U.S.$6.7 billion, or 9 percent of the 1992 annual budget expenditures of U.S.$71 billion. In 1993, its military spending is expected to reach more than 10 percent of the year's budget.[10] A large portion of the increasing budget goes to the Chinese navy, which is the world's third largest navy and has the third largest submarine force of 181 vessels (five of which are nuclear equipped). As a result the Chinese navy has been acquiring a new generation of naval equipment and building up its special combat forces, including the country's 6,000 marines. China's recent acquisition of aerial-refueling technology, the newly completed military air base on Woody Island in the Paracel Islands group, and the purchase of a squadron of 24 long-range Suknoi-27 fighters from Moscow have enabled China to extend its air cover over the Spratly Islands area, some 1,000 kilometers away from Hainan Island.

Taiwan also has been increasing significantly its military spending in recent years. In addition to its active purchasing of jet fighters from France and the United States and submarines from the Netherlands, Taiwan signed a contract with the United States in July 1992 to rent three modern cruisers, which joined its navy in September 1993. It also is reported that the United States has agreed to lease six to nine more warships to Taiwan,[11] and Taiwan is now considering the possibility of building a naval and air base on Itu Aba Island.[12]

Significantly, nearly all of the other Southeast Asian nations hurriedly are making an active effort to beef up their modest naval and air force capabilities.[13] In its largest purchase in recent years, Indonesia bought 39 aging naval vessels (16 corvettes, 9 minesweepers, and 14 landing craft) from the former East Germany in early 1993. Other member states of the Association of Southeast Asian Nations (ASEAN) also have made recent purchases. Malaysia, for example, has ordered two frigates from Britain and signed an agreement with a Swedish shipyard for two modern submarines. The country also announced in July 1993 its plan to purchase 18 MiG 29 fighters from Moscow and 8 McDonnell Douglas F/A 18D strike aircraft from Washington at favorable prices.[14]

Singapore has 4 minehunters on order for 1994, and the first of 12 new large and fast patrol boats is also due for 1994 delivery to join its 50-ship navy, which includes missile corvettes, landing ships, and patrol planes.

The Philippine government has made the modernization of its navy a top military priority and plans to replace most of its obsolete coastal defense boats with sophisticated missile-equipped vessels.[15]

Vietnam's ambition for any significant upgrading of its naval capabilities has been constrained at present, largely by its acute economic problems. The country has tried to compensate for the inability to upgrade its navy by beefing up its garrisons on some of the islands, including purchasing tanks to reinforce its ground occupation. In addition, Vietnam is likely to increase the number of islets under its occupation.

The reasons behind these countries' attempts to strengthen their military forces in the region vary. Some states want to transform their navy from brown-water to blue-water. Others are trying to arm themselves to resist a possible regional threat. Perhaps a few of them are doing it just to keep up with their neighbors. For whatever reasons, if continued and unchecked, this regional arms buying spree may lead to military conflict in the future.

Controversial Resources Development

There may be many causes for the buildup of tension in the South China Sea over the past two decades, but the potential oil-rich seabed obviously is one of the most important considerations sparking the territorial claims. Parts of the continental shelf with the best oil prospects offshore China, the Philippines, Malaysia, Brunei, Indonesia, and Vietnam have been or are under lease to foreign oil companies. The South China Sea today is one of the most productive offshore areas in the world. Since 1950, 29 oil fields and 4 gas fields have been developed in the South China Sea.[16]

Prior to 1980 China's interest in the South China Sea was largely political and geostrategic; namely, to prevent hegemony and to enhance national security. The military operations by China against South Vietnam in the Paracel Islands archipelago in 1974 were aimed primarily at breaking up the Soviet encirclement of China and safeguarding national security.[17]

After the introduction of the open door policy in 1978, China began to focus on its economic construction. The offshore petroleum industry was at the forefront of economic reform as China opened its continental shelf from the Bohai Gulf in the north to the Beibu (Tonkin) Gulf in the south (except the East China Sea) to foreign exploration in 1979. When the Sino-foreign seismic survey agreements in the South China Sea were announced in 1979, Vietnam, which also laid sovereign claim over the same area, protested the proposed surveys as "a brazen violation of the territorial integrity of Vietnam and its sovereignty over its natural resources" and further issued a warning to foreign oil companies involved that they must "bear the consequences" of their actions.[18]

The controversy between China and Vietnam over offshore oil exploration dragged on in the intervening years and erupted again in 1992 when the U.S. Crestone Energy Company signed an offshore contract with China National Offshore Oil Company (CNOOC) that covered an area of 25,155 square kilometers in the Vanguard Bank area (Wanan Tan, in Chinese) on May 8 of the same year. It is reported that China pledged to use its full naval force if necessary to protect Crestone's concession.[19] The Chinese leasing is believed to be a reaction to the fact that Vietnam has delineated all the offshore area it claims into offshore concession blocks. The Vietnamese government protested in a strongly worded statement on May 16, 1992:

> It is clear that the agreement between the Chinese and U.S. company has seriously violated Vietnam's Sovereign Rights over its continental shelf and exclusive economic zone. . . . [T]he Socialist Republic of Vietnam demands

> that the Chinese side stop immediately the illegal exploration and exploitation arrangements with the Crestone company in the area of Vietnam's continental shelf.[20]

In the wake of Washington's relaxation of its trade embargo on Vietnam in early 1993, foreign oil companies in general and U.S. firms in particular rushed to Hanoi to obtain deals to explore Vietnamese waters. It has been reported that two tracts close to the Crestone concession (Dai Hung and Thanh Long) soon may be leased to international oil companies.[21] Among the reasons for Vietnam to court foreign companies is its expectation that concessions to U.S. oil companies would provide "implicit diplomatic insurance against China."[22] In response to this latest proposed leasing China sent a seismic survey vessel on May 5, 1993, into Vietnam's Block 5-2, which is under lease to British Petroleum (BP) and Norway's Statoil. In a press conference, a Chinese Foreign Ministry official stated that "the seismic operations conducted by the Chinese survey vessel in the waters off the Spratly Islands are normal scientific exploration activities."[23]

The deteriorating situation is frustrating for both sides. While Vietnam accuses China of going back on its word to shelve disputes in favor of joint development, China interprets its movement as a retaliatory action. "We don't want to create tension, but we do have to take into account the actions of neighboring countries," a Chinese Foreign Ministry official stated.[24] Any offshore development activity by either side is considered as a provocation by the other side. In a spiraling situation like this, it is difficult to establish which side is responsible for the frustrations.

In another attempt to reinforce its territorial claim over the disputed Spratly Islands, the Hanoi government introduced in September 1993 a 3-year tax holiday for companies and individuals who are willing to invest in and export sea products from the archipelago.[25] This recent Vietnamese move is sure to trigger off another round of Chinese retaliation.

Regional Dialogue on the Spratly Islands Disputes

With the resolution of the Cambodia issue in 1991, the countries in Southeast Asia have increasingly focused their attention on the South China Sea as a potential source of conflict. Massive overlapping jurisdictional claims, continued military occupation of the islands, disproportional military spending, and periodic leasing of the disputed areas have all combined to aggravate the buildup of tensions in the region. These latest developments have rattled Asia and have drawn the attention of some outside powers who have an interest in the South China Sea. Moreover, fear is rapidly growing both in and out of the region that China, as the political and military power in Asia, will come to fill the power vacuum created by the reduction of the U.S. and former Soviet presence in the region.

Despite the deteriorating situation, the countries in the South China Sea region have not given up hope for a peaceful resolution of the Spratly Islands disputes. Their efforts have culminated in a series of informal or semi-formal regional meetings over the past 4 years.[26] The first step in the process was the meeting initiated by Indonesia on "Managing Potential Conflicts in the South China Sea" held in Bali in January 1990. This first meeting was limited in the sense that it was attended only by the six ASEAN states, three of which—Malaysia, Brunei, and the Philippines—have claims to parts of the Spratly Islands.

The second meeting, which was held in Bandung in July 1991, made some improvements over its predecessor. First, the conference was expanded to include, in addition to the ASEAN states, China, Taiwan, Vietnam, and Laos. Second, the participants of the conference consisted not only of scholars but also of officials from the foreign ministries of all the countries involved (except Taiwan), albeit in their private capacities. More importantly, the participants agreed during the meeting that

> [a]ny territorial and jurisdictional dispute in the South China Sea area should be resolved by peaceful means through dialogue and negotiation. . . . [T]he parties involved in such dispute are urged to exercise self-restraint in order not to complicate the situation.[27]

The third meeting took place at Yogyakarta in July 1992 and was attended by 58 participants from the countries in the South China Sea region. This conference made further progress and the participants agreed in principle that "joint development" should be used as a peaceful means to resolve the current dispute in the South China Sea.[28]

The fourth informal workshop was conducted at Surabaya, Indonesia, in August 1993. At this meeting Indonesia proposed to start formal negotiations for a joint development program, but some participants disagreed with the idea, saying that the time was not yet ripe for such talks. It seems obvious from the workshop series that more confidence-building measures need to be taken before any formal negotiation process is implemented.

Apart from these informal commissioned regional workshops, the 1992 annual conference of ASEAN foreign ministers in Manila also made the South China Sea a high priority. China and Russia were invited to attend the conference as guests for the first time in ASEAN's 25-year history.[29] The Spratly Islands disputes were dealt with by the conference in a separate communique, a "Declaration on the South China Sea," which calls on the states involved to

> resolve all sovereignty and jurisdictional issues pertaining to the South China Sea by peaceful means, without resort to force; . . . exercise restraint with the view to creating a positive climate for the eventual resolution of all disputes; [and] explore possibility of co-operation in the South China Sea.[30]

It should be noted that China held its first symposium on the South China Sea islands on September 19, 1991, in Haiko, Hainan Province. This was a quasi-subregional meeting attended by some 70 people, including representatives from Taiwan and Hong Kong. The participants discussed a wide range of issues (such as marine environment, meteorology, navigation, transportation, and sovereignty) and proposed that "the South China Sea issue be resolved by peaceful means with utmost efforts, and the resources in the South China Sea be jointly developed on condition that China's sovereignty is recognized."[31] Taiwan also held its first large symposium on the South China Sea in September 1993. Spratly Islands nationalism still runs high on the island and the conference arrived at the conclusion that international cooperation can be arranged only if under the principle that the Chinese sovereignty is not affected.[32]

The four Indonesia-brokered informal or semi-formal workshops represent a regional effort to install peace and cooperation in the South China Sea. They were designed to bring all the contestants together for the first time in over 20 years, perhaps even in history, to discuss nonpolitical issues in the areas of the environment, navigation, pollution control, marine research, and possible ways to cooperate. Although the workshops have not produced any practicable results, their political significance cannot be overlooked. The important contribution of these workshops is that they have begun a long-overdue process to provide a path from no action, confrontation, and military conflict to dialogue, cooperation, and eventual resolution. More importantly, they have fostered a higher degree of regional recognition of joint development as a useful approach to the current impasse and therefore can be viewed as the first milestone in the search for a peaceful settlement of the Spratly Islands disputes.

Regional Recognition of Joint Development

Throughout the years, various proposals have been recommended for a Spratly Islands solution, such as joint administration on a trusteeship basis,[33] a condominium system,[34] the Antarctic Treaty model,[35] and joint development.[36] Among these recommendations, joint development appears to be the most feasible arrangement acceptable to all parties concerned.

Indonesia concluded with Australia the Timor Gap Treaty on joint development in 1989.[37] Malaysia has recently signed with Thailand a draft agreement on joint development in the Gulf of Thailand.[38] The Philippines and Malaysia agreed in their Treaty of Amity and Cooperation[39] to "share joint exploration, exploitation and development of overlapping maritime areas,"[40] and Vietnam has agreed with Malaysia to jointly develop the overlapping claim area between them.[41]

The concept of joint development of the disputed area also has been gradually endorsed by the Chinese government. During his visit to Singapore in 1990, Chinese Premier Li Peng announced for the first time that China would be putting aside its territorial claim for the present in favor of joint development of the disputed area. This policy was reiterated by Chinese President Yang Shankun during his ASEAN trip in 1992. While attending the ASEAN foreign ministers' conference, China's Foreign Minister Qian Qichen went on to elaborate: "China is in favor of shelving the matter of territorial sovereignty and concentrating on cooperative activities in the area; we have no interest in filling a perceived power vacuum in the region; instead, we want to pursue a peaceful solution towards the issue."[42]

In addition, the principle of joint development has been well received at the regional level. At the Yogyakarta conference of 1992, for instance, the participants agreed that joint development of the South China Sea resources is a key to breaking the current impasse of the Spratly Islands disputes.[43]

It seems that the governments of the claimant states all have accepted the idea of joint development and there appears to have developed a regional consensus on the approach over the past 3 years. But the question still remains of how to put the principle into practice.

Some Implications of Recent Developments and New Directions in the South China Sea

In the past many Americans and Europeans viewed Southeast Asia, including the South China Sea, as the backyard of Japan because of that country's economic power and presence in the region. But the picture is now changing as China begins to loom above the horizon as another big economy.

China's interest in the South China Sea before the 1980s was almost exclusively security oriented. Since then, however, there has been a major shift in the rationale for and emphasis of China's policy from primarily a national security concern to principally economic interests. The armed conflict between China and Vietnam in the Spratly Islands in March 1988 may be viewed as a turning point of this major policy shift. China's operation in the Paracel Islands archipelago against Vietnam in 1974 was essentially geostrategically motivated, but the battle of 1988 with Vietnam in the Spratlys was fought for economic reasons—that is, competition for ocean space and maritime resources. In short, China's position is heavily influenced by its overall open door and economic reform policy. Economic interest have been the major motivation for China's push through the South China Sea since the early 1980s, and it is the underlying driving force for its increasing assertiveness in the region.

China's recent assertiveness in the South China Sea is not without costs, however. First, it already has caused some concern in the region, and should China persist with its forward policy it will reinforce its neighbors' mistrust and misgivings toward China. Second, it is likely to force the ASEAN claimant states and Vietnam to establish a political defense coalition against China because they cannot compete with China individually. Third, it may trigger a revision by some states of the two-China policy, with the effect of embarrassing China by recognizing Taiwan. Fourth, it may introduce new factors into the geopolitics of the region, such as providing a pretext for Japan to rearm itself in order to protect its vital interests in the South China Sea. Last but not least, it may induce the host countries of overseas Chinese to adopt once again a hostile policy toward the overseas Chinese communities since the recent increasing investment by these communities in the motherland may be viewed as a contribution to China's assertiveness.[44]

Traditionally, China generally views territorial issues as bilateral questions and has never engaged in group discussions or submitted itself to international jurisdiction or arbitration. As a big power, it prefers a bilateral, subregional approach in dealing with international affairs. This is also true with respect to the South China Sea issue, for which China prefers bilateral negotiations and settlement to any kind of multilateral approach. The policy has been made clear on various occasions that "*China is willing to hold bilateral talks with the countries concerned to settle the disputes over the Spratly issue, but opposes the internationalism of the issue*" (emphasis added).[45]

In the past, China was reluctant to undertake even bilateral negotiations on border issues. It believed, perhaps misguidedly, that boundary delimitation would affect its friendly neighbor relations. In this context, China's recent initiative to resolve the maritime disputes in the South China Sea through "bilateral talks" demonstrates its pragmatic attitude and flexibility. Indeed, it perhaps should be viewed as an improvement over its rigid position prior to the 1990s. China's flexible attitude toward the Spratly Islands issue is viewed by some authorities as a "major concession" and other claimant states are encouraged to take advantage of China's flexibility to begin discussion on joint development.[46]

Nevertheless, it should be noted that China has been critically fine-tuning its policy toward joint development. Prior to 1993, it was explicitly stated that China was willing to put aside the question of sovereignty and jointly develop the resources in the disputed area. Since early 1993, however, it appears that the country has reformulated its position. In the Annual Work Report of the Chinese government to the National People's Congress (China's parliament), Premier Li Peng stated:

> On the issue of Spratly Islands *whose sovereignty belongs to China*, our country puts forward the proposal of "shelving disputes in favor of joint development," and is willing to work towards the long-term stability, mutual benefit and co-operation in the South China Sea region. (emphasis added)[47]

The emphasis on sovereignty means not only that China has backed away from its previous commitments, but now it also attaches to any joint development negotiation an important condition; that is, China's sovereignty over the Spratlys must be explicitly recognized.

From the foregoing discussion, it may be said that China's policy toward the Spratly Islands disputes in the early 1990s has remained largely unchanged or has become more sophisticated compared with that in the 1980s. China has simply adapted its policy to the changing circumstances. In this sense, China's flexibility to talk represents a concession only in procedure rather than in substance.

On the South China Sea issue, China has been plagued by three interrelated difficulties. Internally, China needs to coordinate and cooperate with Taiwan in order to form a united front against the other foreign claimants. But no breakthrough has been made in their relations and little can be expected to be achieved in the near future. Regionally, China is caught in a dilemma between, on the one hand, its desire to maintain friendly political relations with the Southeast Asian countries, and on the other hand, its ambition to press its territorial claims to the limit. Moreover it must guard against a possible coalition between Vietnam and ASEAN. Internationally, China faces the risk of possible confrontation with major outside powers such as the United States as it tries to maximize its access to marine resources in and its control over the South China Sea. Again at the international level, China perhaps should be on guard against a potential association of Japan, the United States, ASEAN, and, possibly, Vietnam when it goes too far in the South China Sea. These are the major limitations that must be taken into account by the Chinese policymaker.

Taiwan encounters almost the same difficulties as does the mainland, albeit to a lesser extent. As indicated, both mainland China and Taiwan recently have adopted similar policies toward the South China Sea disputes. The hard line they have taken not only reiterates China's sovereignty over the archipelago, but also makes the recognition of it a precondition for any joint development or international cooperation. The coincidence of their policy formulation is not surprising because, despite their endless political quarrels with each other, they share many things in common (such as culture, history, and tradition). It is perhaps a popular belief by many Chinese on both sides of the Taiwan Strait that "blood is thicker than water." Although a major improvement in overall relations between mainland China and Taiwan is not politically feasible at present, some tacit understanding, or even private unofficial cooperation, in areas where they have the same national interests can be expected between them. The South China Sea is probably one of the areas which will see some kind of implicit collaboration between the two sides.[48]

On the surface the current South China Sea imbroglio is a multilateral dispute, but in principle it is a bilateral one in the sense that it has been largely a creation of maritime competition by smaller neighboring states for ocean space and resources against China since the mid-1970s. Should mainland China and Taiwan stand shoulder-to-shoulder in the negotiation process, they will make a stronger case vis-à-vis other claimants. In fact, proposals such as "join hands by the two sides of the Taiwan Strait in defense of the South China Sea sovereignty" often have been voiced recently on both the mainland and Taiwan.[49] Such a likelihood cannot be ruled out in the South China Sea in the long run when the two sides eventually awaken from their battle of words to the importance of their accommodation.

Both mainland China and Taiwan are cautious about proposals to formalize the present multilateral workshop process. While the former wants to see neither internationalization nor regionalization of the issue—because internationalization means inevitable introduction of outside powers into the geopolitical equation, and regionalization will result in a situation where China is far outnumbered by its rivals in the negotiation process—the latter's fear is different. It is concerned mainly about its potential exclusion from the official negotiations once the process is formalized. This partly explains why China favors a bilateral approach, or even the status quo, in the South China Sea for the time being.

Vietnam is another major rival in the South China Sea disputes. It has been the number one enemy of China since the mid-1970s for its pro–former Soviet Union stance and for its duplicity, ingratitude, and aggressive competition for the Spratly Islands as well as the Paracel Islands. Its territorial claims, which conflict with that of China in the South China Sea, have become the major obstacle to improved relations.

Enjoying very little sympathy both in the region and in the West, Vietnam's current strategy is to align with ASEAN in the hope that this linkage eventually would lead to the group's recognition of its territorial claim over the South China Sea islands, and that any attack on Vietnam in the Spratlys by China would be seen as a violation of the group interests as well.[50]

In pursuit of its Vietnam-ASEAN coalition strategy, Vietnam has openly supported a multilateral joint development scheme vis-à-vis China's bilateral position. Its joint development approach conforms with ASEAN's own position that all parties should put aside their sovereignty claims and look for avenues of cooperation. But it is still questionable whether the ASEAN countries would be willing, either collectively or individually, to confront China in this matter on Vietnam's behalf. ASEAN countries generally want to cooperate with China, not confront it.

In addition, Vietnam has appealed to the United States for assistance. A senior Vietnamese official has urged: "If the United States does not show some sign of support for the smaller countries on this issue, Vietnam will have no choice but to accommodate China."[51]

From a political and legal standpoint, introduction of a foreign power into a bilateral or regional dispute is not a good idea because to do so would complicate the issue and its process of resolution. During the 25th ASEAN foreign ministers' meeting, the Philippines tried to sell a similar idea; that is, that the South China Sea issue should be put before a United Nations international conference. This suggestion was resisted by the other ASEAN members. As a senior Malaysian official correctly pointed out, globalizing the issue could "open a Pandora's box."[52]

The United States presence in the South China Sea probably is viewed by some as a generally stabilizing influence on the Spratly Islands disputes. But the U.S. position on the South China Sea is that the United States makes no judgment on the merits of the claims, wants freedom of navigation to be preserved, and supports a peaceful solution of disputes.[53] Although the United States may tend to sympathize with such smaller claimants as Vietnam because of China's grandiose push through the South China Sea, it probably would not side with one claimant against another since such a move would not be in its best interests. It is relatively safe to predict that the U.S. policy toward the South China Sea will remain unchanged as long as its freedom of navigation and overflight in the area are not interrupted and threatened.

There is an interesting Asian phenomenon in terms of boundary issues. These countries seldom negotiate their boundary delimitations; that is, when they talk, they always beat around the bush. This is also the case with joint development in the South China Sea. The concept of joint development has been around for many years and has been well discussed at various workshops, but little progress has been achieved. While the reasons for this are many, the lack of sincerity and genuine interest in joint development on the part of most, if not all, of the claimants is probably a major cause. For instance, although Vietnamese Premier Do Muoi has said that his government was "pleased" by the Chinese proposal on joint development of the overlapping claim areas, no substantive response has been made yet by Vietnam. Indeed, it is unlikely that Vietnam will abandon its superior military occupation in the Spratly Islands group to share resources with others. Likewise, other claimants may merely be paying lip service to the concept. If so, there is a real danger that the talks and the principle of joint development will be abused by the claimants to serve their own private interests.

As observed, informal regional meetings are fine at the outset of the process. They have, in fact, played an important facilitative role to elevate the idea of joint development to a higher degree of recognition and acceptance at the regional level. But the countries in the South China Sea cannot afford another 10 or 15 years to only talk about joint development. They need to put the theory into practice in order to reduce tension and prevent further conflict in the region.

One possible mechanism to help accomplish this would be the establishment of a "Regional Round Table on Joint Development." The proposed round table (consisting of an equal number of official representatives from the government of each claimant state) could be either a coordinating body whose function is to serve as a liaison office or an authority whose function is to supervise, or even to undertake, joint development projects. Its composition, mandate, and work procedure should be left to negotiation and agreement by the governments of the claimant states themselves. The primary purpose of the round table would be to formalize the dialogue currently brokered by Indonesia and to speed up the joint development process.

Conclusion

It seems from the preceding review and examination that there is cause both for gloom and guarded optimism regarding the long-running dispute over the Spratly Islands in the South China Sea. The cause for gloom relates to the latest developments in the region, such as the arms buying spree. Alternatively, the cause for guarded optimism for a peaceful resolution of the Spratly Islands disputes arises out of the unprecedented regional efforts to search for an avenue of cooperation by which the claimant states can shelve their sovereignty claims and jointly develop the natural resources in the area.

The maritime disputes have earned the South China Sea, once an isolated corner of the Pacific, the sobriquets of "Asia's next flashpoint," "Asia's ammunition house," and "another hot spot of the world." There is a possibility for this area to become a "dangerous ground." But the best way to deal with a potential threat is to turn it into an opportunity. The nations and their peoples in the region understand this. As an Indonesian diplomat put it: "talk talk is better than shoot shoot."[54] This is absolutely right, but it is not enough. We should add to it: "actions speak louder than words."

Only a regional cooperative approach in the form of joint development, either bilateral or multilateral as the case may be, can provide a key to the current imbroglio of the Spratly Islands disputes and help to achieve "Pacem in Maribus" in the South China Sea.

Notes

1. There were several excellent studies on the process of the South China Sea disputes—for instance, M. S. Samuels, *Contest for the South China Sea* (New York: Methuen, 1982); and Chi-

kin Lo, *China's Policy Towards Territorial Disputes: The Case of the South China Sea Islands* (London: Routledge, 1989). See also Z. Gao, "The South China Sea Disputes and the Prospect for Joint Development" (paper presented at the 1991 Maritime Strategy Series Conference: Maritime Interests, Conflict, and the Law of the Sea, Halifax, Nova Scotia, Canada, June 20–23, 1991).

2. Cf. M. J. Valencia, *South-East Asian Seas, Oil under Troubled Waters: Hydrocarbon Potential, Jurisdictional Issues, and International Relations* (Singapore: Oxford University Press, 1985), 87–89.

3. *Central Daily News* (Taiwan) (in Chinese), Dec. 2, 1992, 4.

4. The Law of the People's Republic of China on the Territorial Sea and Contiguous Zone was promulgated and became effective on February 25, 1992; reprinted in *People's Daily* (Beijing) (in Chinese), Feb. 26, 1992, overseas ed., 4.

5. See, for sample, Z. Han, J. Lin, and F. Wu, eds., *Collection of Historical Materials on China's Islands in the South China Sea* (Beijing: Oriental Press, 1988).

6. *People's Daily*, Sept. 29, 1989, overseas ed., 4.

7. *Central Daily News*, Dec. 2, 1992, 4.

8. Ibid.

9. Ibid.

10. Note that China's military spending is much less than that of the world's major powers and even lower than that of its neighbors. For instance, the U.S. military budget for 1993 runs as much as U.S.$270 billion. The military spendings of the United Kingdom, France, and Germany are all over U.S.$30 billion, and Japan's budget is U.S.$37.73 billion for the same period. H. Mu, "The Doctrine of China's Military Threat Is Groundless," *People's Daily*, Apr. 20, 1993, overseas ed., 6.

11. See *Central Daily News*, Sept. 29, 1993, 3; *Central Daily News*, Oct. 8, 1993, 1.

12. *Central Daily News*, July 15, 1993, 1.

13. *Central Daily News*, Dec. 23, 1990, 4.

14. M. Vatikiotis, "Mix and Match: Russia and US Split Order for Combat Aircraft," *Far Eastern Economic Review* 156, no. 27 (1993): 13; Tai Ming Cheung, "Fangs of the Dragon—Peking's Naval Build-up Sparks ASEAN Reaction," *Far Eastern Economic Review* 155, no. 92 (1992): 19–20.

15. Cheung, "Fangs of the Dragon," 19–20.

16. "Territorial Disputes Simmer in Areas of South China Sea," *Oil & Gas Journal*, July 13, 1992, 21.

17. For a discussion of this, see Lo, *China's Policy Towards Territorial Disputes*, particularly pp. 53–108.

18. See S. S. Harrison, "Conflicting Offshore Boundary Claims," *China Business Review*, May–June 1983, 51–53.

19. N. D. Kristof, "China Signs U.S. Oil Deal for Disputed Waters," *New York Times*, June 18, 1992, A8; M. Vatikiotis, "China Stirs the Pot," *Far Eastern Economic Review* 155, no. 27 (1992): 14–15.

20. See "Statement of the Ministry of Foreign Affairs of the Socialist Republic of Vietnam on the Agreement between Chinese and U.S. Oil Companies for the Exploration and Exploitation of Oil and Gas on the Continental Shelf of Vietnam" (Hanoi, May 16, 1992).

21. N. Chanda, "Stampede for Oil: U.S. Firms Rush to Explore Vietnamese Waters," *Far Eastern Economic Review* 156, no. 8 (1993): 48.

22. Ibid.

23. *People's Daily*, May 14, 1993, overseas ed., 1.

24. Vatikiotis, "Mix and Match," 13.

25. "Vietnam Spratly Tax Holiday," *Far Eastern Economic Review* 156, no. 37 (1993): 14.

26. For a description of the nongovernmental workshop process, see T. L. McDorman, "The South China Sea Islands Dispute in the 1990s—A New Multilateral Process and Continuing Friction," *International Journal of Marine and Coastal Law* 8 (1993): 263–285.

27. Ibid., 283 (Appendix 1: Workshop Statement, Bandung, 18 July 1991).

28. Ibid., 283–285 (Appendix 2: Workshop Statement, Yogyakarta, 2 July 1992).

29. "ASEAN Focuses on Cambodia, Burma, and Spratlys," *Bangkok Post*, July 25, 1992; "ASEAN Proposes Guidelines to Settle South China Sea Rows," *Asian Wall Street Journal*, July 23, 1992, 1, 7.

30. McDorman, "South China Sea Islands Dispute," 285 (Appendix 3: ASEAN Declaration on the South China Sea). For a brief account, see M. Bociurkiw, "Agreement Reached on Spratlys," *South China Morning Post* (Hong Kong), July 23, 1992, 7.

31. "Symposium on the South China Sea Islands," *People's Daily*, Sept. 19, 1993, overseas ed., 4 (author's translation).

32. For more information on the symposium, see *Central Daily News*, Sept. 7, 1993, 1; *Central Daily News*, Sept. 8, 1993, 1–2; *Central Daily News*, Sept. 9, 1993, 1; and *Central Daily News*, Sept. 10, 1993, 1.

33. D. C. Drigot, "Oil Interests and the Law of the Sea: The Case of the Philippines," *Ocean Development and International Law* 12 (1982): 50.

34. J. R. Coquia, "Maritime Boundary Problems in the South China Sea," *University of British Columbia Law Review* 24 (1990): 124.

35. A. Hamzah, "Jurisdictional Issues and the Conflicting Claims in the Spratly: What Can Be Done in Enhancing Confidence-building Measures," in *Proceedings of Workshops on Managing Potential Conflicts in the South China Sea, Penpasar, Indonesia, January 22–24, 1990* (draft), 27–28.

36. The idea has been proposed by a number of scholars. For example, see M. J. Valencia and M. Miyoshi, "Southeast Asian Seas: Joint Development of Hydrocarbons in Overlapping Claim Areas?" *Ocean Development and International Law* 16 (1986): 211.

37. Treaty between Australia and the Republic of Indonesia on the Zone of Cooperation in an Area between the Indonesian Province of East Timor and Northern Australia, Dec. 11, 1989, 29 I.L.M. 469.

38. The text of the draft agreement has not been published.

39. Noted in Coquia, "Maritime Boundary Problems," 123.

40. Ibid.

41. The text of the agreement has not been published.

42. M. Bociurkiw, "China Suspends Claim on Spratlys," *South China Morning Post*, July 22, 1992, 1, 11.

43. F. Ching, "Scientific Meetings Being Held to Reduce Spratlys Tension," *Far Eastern Economic Review* 156, no. 21 (1993): 30.

44. B. A. Hamzah, "China's Strategy," *Far Eastern Economic Review* 155, no. 32 (1992): 22.

45. Statement by the spokesman of the Chinese Foreign Ministry at a press conference, reprinted in *People's Daily*, July 17, 1992, overseas ed., 1.

46. M. J. Valencia and P. Cai, "Vietnam/China Relations and Their Maritime Disputes" (draft, East-West Center, Honolulu, Hawaii, May 5, 1993), 9.

47. Annual Work Report of the Chinese Government by Premier Li Peng to the First Plenary Session of the Eighth National People's Congress (Mar. 15, 1993), reprinted in *People's Daily*, Apr. 2, 1993, overseas ed., 3 (author's translation).

48. This is perhaps already happening. At the Indonesia-brokered informal negotiation workshops on managing the South China Sea disputes, China supported almost everything proposed by Taiwan, except the usage of its official title. It was voiced at the recent Symposium on the South China Sea held in Taiwan that "the two sides of the Taiwan Strait must adopt the same position in order to achieve the favorable sovereign conditions." "Strong Declaration by Lian Kui on the Chinese Sovereignty in the South China Sea," *Central Daily News*, Sept. 8, 1993, 2.

49. *Central Daily News*, Oct. 2, 1993, 8.

50. Cf. S. McElroy, "Failure to Resolve Marine Boundary Disputes Raises Tensions in SE Asia," *Marine Policy* 16 (1992): 489. Vietnam signed a treaty of amity and cooperation with

ASEAN in Manila on July 22, 1992, and is now looking forward to full membership in the near future. Ibid.

51. Quoted in Valencia and Cai, "Vietnam/China Relations," 4.

52. R. Pura, "China Seeks Closer Security Ties to ASEAN," *Asian Wall Street Journal*, July 22, 1992, 7.

53. S. Awanohara, "Washington's Priorities: U.S. Emphasizes Freedom of Navigation," *Far Eastern Economic Review* 155, no. 92 (1992): 18.

54. Ching, "Scientific Meetings," 30.