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THE AMERICAS

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Item 5 (e) and 8 (e) of the provisional agenda*

REVIEW OF THE LATEST TECHNOLOGY AND ITS RELATIONSHIP TO POLICY,
ECONOMY AND DEVELOPMENT IN CARTOGRAPHIC DATA ACQUISITION AND
SUPPORTING ACTIVITIES

HYDROGRAPHIC SURVEYING AND NAUTICAL CHARTING

REVIEW OF THE LATEST DEVELOPMENTS RELATED TO POLICIES AND MANAGEMENT
OF NATIONAL MAPPING AND CHARTING PROGRAMMES

MAP AND CHART SALES AND DISTRIBUTION POLICIES AND PRACTICES

Status of hydrographic surveying and nautical
charting world-wide

Paper submitted by the International Hydrographic Organization**

* E/CONF.77/1.

** Prepared by the International Hydrographic Organization (IHO) in co-operation with the Department of Technical Co-operation for Development, United Nations Secretariat.

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INTRODUCTION

1. Purpose

The Cartography Section of the Natural Resources and Energy Division of the Department of Technical Co-operation for Development of the United Nations Secretariat has undertaken regularly a survey on the status of world topographic mapping. The United Nations Regional Cartographic Conferences for Asia and the Pacific and for the Americas proposed that the scope of the survey should be enlarged to incorporate hydrographic surveying and nautical charting, both of which activities play an important part in many development programmes.

To progress this study, the aid was enlisted of the International Hydrographic Organization (IHO).

2. Background

In 1980, a questionnaire (see annex) was circulated to 128 Member States of the United Nations who were coastal States, the answers to which were to provide the basic data needed for the study. Responses were very limited (only 39 States) and it was clear that some of the questions had been misinterpreted. It was therefore decided to reissue a revised questionnaire in 1983.

3. United Nations Secretariat and International Hydrographic Organization

The United Nations Cartography Section and the International Hydrographic Bureau (the Secretariat of the IHO) have co-operated closely to ensure the fullest possible response to enable a sensible assessment to be made of the status of the world's hydrographic surveying and nautical charting resources.

The results have been analysed by the IHB staff and this report has been prepared jointly by the United Nations Secretariat and the International Hydrographic Organization.

4. Parameters of the study

Hydrographic surveying and nautical charting are closely related; the latter being mainly, but not exclusively, dependent upon the former. The study is therefore addressed firstly to an assessment of the governmental resources available for conducting hydrographic surveys in terms of survey vessels and sea-going personnel; secondly to resources available for chart production and maintenance in terms of cartographic staff, chart coverage, both present and planned, and printing facilities.

An important element is the individual national assessment of national waters under three headings: "adequately surveyed", "requiring re-survey", and "not surveyed". From these data it is possible to judge the work-load faced by the world in attempting to provide the mariner with reliable up-to-date charts upon which he can navigate his ship in safety.

At the time of the study, 140 coastal States were circulated with the questionnaire. All 52 member States of the IHO were approached through IHB routine channels; the remainder were approached through United Nations channels and, where appropriate opportunities were presented, directly by the IHB.

The total responses numbered 60. The majority were from States which have, to a greater or lesser degree, some sort of hydrographic capability and were able to contribute a suitable reply. However, there were some notable exceptions in respect to non-responding States where a high level of capability is known to exist and for which data have been culled from either the first questionnaire or from IHB records.

The reliability of some of the replies to section A.1 of the questionnaire, which is so important to the results of the study, is clearly questionable; however, statistical averaging possibly reduces some of the doubt if one assumes that the over-estimates balance out the under-estimates.

Of particular concern is the low response rate from Africa and the Pacific where very large Exclusive Economic Zones (EEZ) exist, sea-borne trade is vital, and any capability for hydrographic surveying and nautical charting is minimal or even non-existent. Hydrography, when it is needed, is probably surveyed by commercial interests in pursuit of their own objectives.

Commercial surveying is not covered by this report, yet quite extensive capability within the commercial sector is evident. Unfortunately, without adequate co-ordinatory control, the results of work executed for a specific project are often lost, and the various world charting services seldom benefit therefrom.

Reliability of this study in the world-wide sense is therefore good only when judged on the basis of the eight selected regions and in a global sense.

5. Conclusions

The conclusions to be drawn are very evident. Large areas of continental shelf and EEZ waters are inadequately surveyed or not surveyed at all. The majority of coastal States have little or no capability for carrying out even vital port, or port approach, surveys; for publishing charts which would ensure the safety of navigation in their waters; or for mapping the sea-bed of their EEZs. Given the high costs and length of time needed to create even an elementary hydrographic capability, these States have little hope of remedying the situation in the near future by their own efforts.

Even the highly developed industrial coastal States are not without immense problems: the United Kingdom, for instance, quotes 66.8 per cent of its maritime zones as 'unsurveyed', 23.3 per cent 'requiring re-survey', and only 9.9 per cent 'adequately surveyed'.

At the other end of the scale, Fiji's reply shows comparative figures of 99.1 per cent, 0 per cent, and 0.9 per cent. With 1,135,300 km² of EEZ, two survey boats and three surveyors, Fiji is faced with a daunting work-load.

Shipowners instruct their masters to keep to well-defined tracks to avoid the possibility of striking uncharted obstructions. Even so, evidence shows that vessels do become casualties of such perils.

Thus a long-term plan is urgently needed to train personnel in basic skills and utilize all possible applicable technology for hydrographic and charting operations, including, for instance, satellite remote sensing, to remedy (or stem the tide of) what is an ever-increasing world problem.

The global resources presently available are shown by this study to be:

- 67 National Hydrographic Offices
- 204 Survey vessels
- 323 Small Survey craft
- 3 409 Survey staff employed on hydrographic surveys
- 1 836 Cartographers and supporting staff
- 17 728 Charts are schemed
- 15 380 Charts are presently published
 - 48 Hydrographic Offices having chart printing facilities
 - 58 Hydrographic Offices issuing Notices to Mariners
- 162 Nautical publications are issued, of which there are:
 - 43 Tide Tables
 - 39 Light Lists
 - 31 Sets of Sailing Directions
 - 22 Sets of Radio Signals for Mariners
 - 27 Miscellaneous publications

I. INVENTORY OF COASTAL STATES WITH INDICATION OF RESPONSES
TO THE STUDY QUESTIONNAIRE INCLUDING A MAP SHOWING THE
REGIONAL DIVISION USED FOR THE STUDY

AFRICA		EUROPE AND MEDITERRANEAN	
29	.. No. of States		34
(8)	.. No. of responses		(21)
Angola		Albania	
Benin		Algeria*	
Cameroon		Belgium*	
Cape Verde		Bulgaria	
Comoros		Cyprus	
Congo		Denmark*	
Equatorial Guinea		Egypt+	
Gabon		Finland*	
Gambia		France*	
Ghana		German Democratic Republic*	
Guinea		Germany, Federal Republic of*	
Guinea-Bissau		Greece*	
Ivory Coast		Iceland+	
Kenya*		Ireland	
Liberia		Israel	
Madagascar*		Italy*	
Mauritania		Lebanon	
Mauritius*		Libyan Arab Jamahiriya	
Mozambique*		Malta	
Nigeria+		Monaco	
Sao Tome and Principe		Morocco*	
Senegal*		Netherlands*	
Seychelles*		Norway*	
Sierra Leone		Poland*	
Somalia		Portugal*	
South Africa*		Romania*	
Togo		Spain*	
United Republic of Tanzania*		Sweden*	
Zaire		Syrian Arab Republic	
		Tunisia	
		Turkey*	
		USSR*	
		United Kingdom*	
		Yugoslavia*	
AUSTRALASIA			
	4		
	(4)		
Australia*			
New Zealand*			
Papua New Guinea*			
Cook Islands*			

* Responding State.

+ Known to have hydrographic capability but not responding.

NORTH AMERICA

23
(5)

Antigua and Barbuda
Bahamas
Barbados
Belize
Canada*
Costa Rica
Cuba+
Dominica
Dominican Republic
El Salvador
Grenada
Guatemala*
Haiti
Honduras
Jamaica
Mexico+
Nicaragua
Panama*
Saint Christopher and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Trinidad and Tobago*
United States*

PACIFIC

9
(2)

Fiji*
Kiribati
Nauru
Niue
Samoa
Tonga
Tuvalu
Vanuatu
Solomon Islands*

SOUTH-EAST ASIA

11
(8)

China*
Democratic Kampuchea
Democratic People's Republic of Korea
Indonesia*
Japan*
Malaysia*
Philippines*
Republic of Korea*
Singapore*
Thailand*
Viet Nam

SOUTH AMERICA

10
(6)

Argentina*
Brazil*
Chile*
Colombia+
Ecuador*
Guyana
Peru+
Suriname
Uruguay*
Venezuela*

SOUTH ASIA

20
(4)

Bahrain*
Bangladesh+
Burma+
Democratic Yemen
Djibouti
Ethiopia
India*
Iran (Islamic Republic of)+
Iraq+
Jordan
Kuwait

SOUTH ASIA (continued)

Maldives

Oman

Pakistan*

Qatar

Saudi Arabia

Sri Lanka

Sudan*

United Arab Emirates

Yemen

II

TABULATION OF RESPONSES

EXPLANATORY NOTES

The following symbols have been used in the tables throughout the report:

- | | |
|-------------------|---|
| Three dots (...) | indicate data are not available or are not reported. |
| A dash (-) | indicates amount is nil or negligible. |
| A blank | indicates no response to questionnaire or data not available separately. |
| A full stop (.) | is used to indicate decimals. |
| Entries shown (o) | data from 1980 questionnaire* or International Hydrographic Organization records. |
| incl | indicates adjacent number includes this element. |
| years | are indicated by the final two figures i.e. 83 = 1983. |
| Y or N | indicates an affirmative or negative reply to questions 4 (a) to 4 (f). |

Footnotes are indicated on each page.

The designations employed and the presentation of material in this study do not imply the expression of any opinion whatsoever on the part of the United Nations Secretariat and of the International Hydrographic Organization concerning the legal status of any country, territory or area or of its authorities or concerning the delimitation of its boundaries. The regional divisions expressed throughout have been designed to serve the purpose of this study only.

* Questionnaire on the Status of Hydrographic Surveying and Nautical Charting World Wide, designed by the International Hydrographic Organization and distributed by the United Nations Secretariat in 1980.

The Status of Hydrographic Surveying and Nautical Charting World-Wide

REGION : AFRICA

Table 1

COASTAL STATE No. 29 * Members IHO No. 3 + Have national Hydrographic Services	Area of EEZ km ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships			CHARTS*						PUBLICATIONS						maximum chart printing size						
					boats	assistants	draftsmen	Schemed			Published			Latest Symbols/ /Catalogue	Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners		Other Publications					
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000														
ANGOLA	605.7																									
BENIN	27.1																									
CAMEROON	15.4	...	...	...	1	...	...	...	...	...	...	...	...	...			
CAPE VERDE	789.4				1	...	...	...	...	...	...	...	...	...			
COMOROS	249.0																									
CONGO	24.7																									
EQUATORIAL GUINEA	283.2																									
GABON	213.6																									
GAMBIA	19.5																									
GHANA	218.1																									
GUINEA	71.0																									
GUINEA-BISSAU	150.5	...	...	...	-	...	...	...	...	...	...	...	...	...
					1	...	...	...	...	...	...	...	...	77												

* Charts shown are included in world series.

COASTAL STATE No. * Members IHO No. + Have national Hydrographic Services	Area of EEZ km ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships	surveyors	cartographers	CHARTS (C)					PUBLICATIONS						maximum chart printing size	
								Schemed		Published			Latest Symbols/ /Catalogue	Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners		Other Publications
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000								
IVORY COAST	104.6																			
KENYA	118.0	25	75	0	-	2	21/	...	...	...	...	...	-	N	N	N	N	Y	N	-
					-	4	50	2	2	-	6	1	-							
LIBERIA	229.7																			
MADAGASCAR	1292.0	30	35	35	-	4	2	-	-	-	-	110	-	N	N	N	N	Y	N	71 cmx 102 cm
					2	12	1	-	-	-	-	-	-							
MAURITANIA	154.3																			
MAURITIUS	1113.0	0	0	100	-	-	-	-	-	-	-	-	-	N	N	N	N	N	N	-
					-	-	7	-	-	-	-	-	-							
MOZAMBIQUE +	562.0	85	15	0	-	3		...	...	...	...	...	81	N	N	N	N	Y	...	-
					1	5		4	-	20	16	7	81							
NIGERIA *	210.9	...	...	...	1	5	...	...	...	...	...	...	...	Y	...	...	...	Y	...	...
+								
SAO TOME AND PRINCIPE	128.2																			
SENEGAL	205.7	10	90	0	1	-	-	...	...	...	...	1	N	N	N	N	Y	Y	-	
					1	-	-	...	...	...	...	1	N							
SEYCHELLES +	1349.3	2.5	6	91.5	-	1	2	-	-	-	1	1	83	Y	N	...	N	Y	...	-
					1	4	3	-	-	-	-	-	83							

(C) Charts shown are included in world series

COASTAL STATE No. * Members IHO No. + Have national Hydrographic Services	Area of EEZ km ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships			CHARTS					PUBLICATIONS						maximum chart printing size		
					boats	assistants	draftsmen	Schemed		Published			Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners	Other Publications			
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000								Latest Symbols/ /Catalogue	
SIERRA LEONE	155.7																				
SOMALIA	782.8																				
SOUTH AFRICA * +	1553.4	30	50	20	1 ...	8 12	2 2	... 18	- -	... 37	... 18	15 14	82 83	Y	Y	Y	Y	Y	-	880 mm x 1260 mm	
TOGO	2.1																				
UNITED REPUBLIC OF TANZANIA	223.2	-	-	100	- 1	11/ 41/	222/ 1652/	- -	- -	- -	- -	- -	- -	Y	N	N	N	Y	N	30" x 40"	
ZAIRE *	1.0																				

The Status of Hydrographic Surveying and Nautical Charting World-Wide

REGION : AUSTRALASIA

Table 2

COASTAL STATE No. 4 * Members IHO No. 2 + Have national Hydrographic Services	Area of EEZ KM ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships	surveyors	cartographers	CHARTS					PUBLICATIONS						maximum chart printing size		
								Schemed		Published			Latest Symbols/ /Catalogue	Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners		Other Publications	
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000									
AUSTRALIA * +	4496.3	20(7)	16(5)	64 (88)	2 ...	30 78	1 57	47 14	99 51	194 75	127 81	55 36	83 83	Y	N	N	N	Y	N	720 mm x 1190 mm	
NEW ZEALAND * +	4833.2 ^{1/}	8	5	87	3 4	14 26	... 15	25 18	6 3	40 28	45 34	30 21	83 83	Y	Y	N	N	Y	Y	720 mm x 1100 mm	
PAPUA NEW GUINEA +	2366.6	5	5	90	-	1 -	-	... 82/	... 132/	... 142/	... 162/	... 12/	-	Y	N	N	N	N	N	-	
COOK ISLANDS	... 1/	...	...	...	-	-	-	...	...	...	...	...	...	...	...	...	...	...	...	...	-

1/ Figure showing EEZ for New Zealand includes also data for Cook Islands 2/ Included in world series or regional series

The Status of Hydrographic Surveying and Nautical Charting World-Wide
Table 3

REGION : EUROPE and MEDITERRANEAN

COASTAL STATE No. 34 * Members IHO No. 21 + Have national Hydrographic Services	Area of EEZ km ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships	surveyors	cartographers	CHARTS					PUBLICATIONS						maximum chart printing size	
								Schemed		Published			Latest Symbols/ /Catalogue	Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners		Other Publications
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000								
ALBANIA	12.3																			
ALGERIA +	137.2	90	10	-	1 2	7 25	1 6	6 3	- -	14 14	10 -	20 1	...	N	Y	N	N	Y	...	841 mmx 1189 mm
BELGIUM * +	2.7	100	-	-	2 4	6 28	incl. incl.	...	...	...	...	...	80 82	Y	Y	N	...	Y	N	840 mmx 1230 mm
BULGARIA	32.9																			
CYPRUS	99.4	...	...	...	- 1	4 ...	...	...	...	1 1	...	...	...	...	N	N	N	Y	...	...
DENMARK * +	1464.2 ^{1/}	...	...	...	2	11	29	32	1	22	89	36	82	Y	Y	Y	Y	Y	Y	840 mmx 1200 mm
EGYPT * +	173.5	60	20	20	- 2	25 ...	5 ...	4 4	1 1	6 6	3 3	5 5	...	...	...	...	...	Y	...	...
FINLAND * +	98.1	80	15	5	1 9	8 16	5 9	4 4	1 -	10 7	118 118	6 6	83 83	N	Y	N	N	Y	Y	85 cmx 110 cm
FRANCE * +	7145.9 ^{2/}	31	29	40	6 1	140 84	33 17	...	...	...	...	...	81 83	Y	Y	Y	Y	Y	Y	840 mmx 1200 mm
GERMAN DEMOCRATIC REPUBLIC +	9.6	70	30	-	1 1	7 10	9 8	5 5	6 6	26 26	46 44	4 4	74 82	N	Y	Y	Y	Y	Y	90 cmx 126 cm
GERMANY, FEDERAL * REPUBLIC OF +	40.8	100	-	-	4 9	36 incl.	30 17	229 229	67 67	266 263	328 326	116 116	83 83	Y	Y	Y	Y	Y	Y	840 mmx 1200 mm

1/ Includes data for Greenland and the Faroe Islands 2/ Includes data for all overseas departments and territories

COASTAL STATE No. * Members IHO No. + Have national Hydrographic Services	Area of EEZ km ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships	surveyors	cartographers	CHARTS						PUBLICATIONS						maximum chart printing size		
								Schemed			Published			Latest Symbols/ /Catalogue	Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners		Other Publications	
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000										
GREECE * +	505.1	60	40	-	2 1	5	6	4	1	47	104	214	79	N	Y	Y	N	Y	N	86 cmx 120 cm		
						19	17	4	1	24	10	89	77									
ICELAND * +	866.9	15	45	40	-	4	5	5	6	22	7	5	...	Y	...	...	...	Y	...	...
						...	...	3	4	13	5	5	...							
IRELAND	380.3																					
ISRAEL	23.3	100	-	-	-	-	-	-	-	3	-	4	...									
						-	-	-	-	3	-	4	...									
ITALY * +	552.1	25	75	-	3	21	6	...	...	...	...	...	80	Y	Y	Y	Y	Y	Y	890 mmx 1260 mm
					111/	35	7	18	-	85	64	156	82									
LEBANON	22.6																					
LIBYAN ARAB JAMAHIRIYA	338.1																					
MALTA	66.2																					
MONACO *	-																					
MOROCCO	278.1	-	-	...	-	-	-	-	-	-	-	
NETHERLANDS * +	84.7	70	30	-	3	13	3	6	2	7	30	5	83	Y	Y	Y	N	Y	Y	...		
					...	14	9	6	2	7	30	5	83									

1/ as required

The Status of Hydrographic Surveying and Nautical Charting World-Wide
Table 3 (cont.)

REGION : EUROPE and MEDITERRANEAN

COASTAL STATE No. * Members IHO No. + Have national Hydrographic Services	Area of EEZ km ² · 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships	surveyors	cartographers	CHARTS					PUBLICATIONS						maximum chart printing size	
								Schemed		Published			Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners	Other Publications		
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000								Latest Symbols/ /Catalogue
NORWAY * +	2024.8	2.9	7.1	90	6	30	16	30	8	61	134	45	80	Y	Y	Y	N	Y	Y	...
					21	24	incl.	30	8	56	131	34	83	Y	Y	Y	Y	Y	Y	...
POLAND * +	28.5	80	20	-	1	16	7	5	-	28	10	3	82	N	Y	Y	Y	Y	Y	900mmx 1150 mm
					1	40	11	5	-	20	10	3	79	N	Y	Y	Y	Y	Y	900mmx 1150 mm
PORTUGAL * +	1774.2	45	15	40	1	30	3	17	-	39	54	136	81	Y	Y	Y	Y	Y	Y	102cmx 144 cm
					5	50	4	17	-	36	54	133	82	Y	Y	Y	Y	Y	Y	102cmx 144 cm
ROMANIA +	31.9	100	-	-	1	3	2	26	-	58	25	3	83	N	Y	Y	Y	Y	Y	68cmx 93 cm
					1	1	4	19	-	15	11	1	83	N	Y	Y	Y	Y	Y	68cmx 93 cm
SPAIN * +	1219.4	45	55	-	6	24	25	12	51	133	49	192	81	Y	Y	Y	Y	Y	Y	830mmx 1120 mm
					8	67	19	11	50	125	32	176	81	Y	Y	Y	Y	Y	Y	830mmx 1120 mm
SWEDEN * +	155.3	5	95	-	3	20	19	11	1	37	86	10	82	N	Y	Y	Y	Y	Y	841mmx 1189 mm
					10	40	50	11	1	37	69	10	83	N	Y	Y	Y	Y	Y	841mmx 1189 mm
SYRIAN ARAB * REPUBLIC	10.3																			
TUNISIA	85.7																			
TURKEY * +	236.6	76	3	21	1(1)	5	4	12	18	50	42	22	82	N	Y	N	N	Y	Y	100 cmx 140 cm
					3	12	15	11	17	48	40	20	82	N	Y	N	N	Y	Y	100 cmx 140 cm
USSR * +	4490.3	38	62	-	43	...	...	...	...	...	...	...	71	Y	Y	Y	Y	Y	...	89 cmx 119 cm
					...	...	...	300	110	820	487	413	82	Y	Y	Y	Y	Y	...	89 cmx 119 cm
UNITED KINGDOM * +	1785.3 ^{1/2}	9.9	23.3	66.8	8	99	66	...	...	...	...	...	79	Y	Y	Y	Y	Y	Y	910mmx 1215mm
					3	146	198	96	23	225	472	268	83	Y	Y	Y	Y	Y	Y	910mmx 1215mm
YUGOSLAVIA * +	52.5	40	60	-	1	16	5	7	7	38	23	20	81	Y	Y	Y	Y	Y	Y	87cmx 127 cm
					5	20	7	7	5	35	21	20	76	Y	Y	Y	Y	Y	Y	87cmx 127 cm

1/ Includes data for Bermuda, British Virgin Islands, the Cayman Islands, the Turks and Caicos Islands, Pitcairn, Henderson Ducie, Oeno Islands, St. Helena and Ascension.

The Status of Hydrographic Surveying and Nautical Charting World-Wide

REGION : NORTH AMERICA

Table 4

COASTAL STATE No. 23 * Members IHO No. 6 + Have national Hydrographic Services	Area of EEZ km ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships			CHARTS					PUBLICATIONS						maximum chart printing size		
					boats	assistants	draftsmen	Schemed		Published			Latest Symbols/ /Catalogue	Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners		Other Publications	
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000									
ANTIGUA and BARBUDA	...																				
BAHAMAS	759.2																				
BARBADOS	167.3																				
BELIZE	...	66	-	34	-	-	-							N	Y	N	N	Y	N	-	
CANADA *	2939.4	45	30	25	10	112	101 ^{1/}	177	57	23 ⁴	912	846	83								
					88	-	incl.	128	23	105	625	774	81	Y	Y	Y	Y	Y	...	110 cmx 161 cm	
COSTA RICA	258.9																				
CUBA *	362.8	...	...	...	3	...	...	12	-	37	14	54	...								
					6	...	...	12	-	35	14	48	78	Y	Y	Y	...	Y	...	...
DOMINICA	...																				
DOMINICAN REPUBLIC *	268.8																				
EL SALVADOR	91.9																				
GRENADA	267.5																				

1/ Split 1/3:2/3

2/ Included in British Admiralty Charts

The Status of Hydrographic Surveying and Nautical Charting World-Wide
Table 4 (cont.)

REGION : NORTH AMERICA

COASTAL STATE No.	Area of EEZ km ² · 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships	surveyors	cartographers	CHARTS						PUBLICATIONS						maximum chart printing size
								Schemed			Published			Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners	Other Publications	
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000	Latest Symbols/ /Catalogue							
GUATEMALA * +	99.1	10	10	80	-	1	1				2	5	...	Y	N	N	N	N	N	-
HAITI	160.5																			
HONDURAS	200.9																			
JAMAICA	297.6																			
MEXICO +	2851.2	...	...	...	2	...	...	74	Charts listed					Y	...	Y	...	Y	Y	...
NICARAGUA	159.8																			
PANAMA +	306.5	70	20	10	-	4	15	...	...	...	...	...	-	N	N	N	N	N	N	-
SAINT CHRISTOPHER AND NEVIS	...				1	5	3	-	-	7	12	6	-							
SAINT LUCIA	...																			
SAINT VINCENT AND THE GRENADINES	...																			
TRINIDAD AND TOBAGO * +	76.8	51	49	-	-	3	3	-	-	-	-	-	-	N	N	N	N	Y	N	-
UNITED STATES * +	9711.4 ^{1/}	42	57	1	8	120	139	66	9	86	568	299	83	Y	Y	Y	Y	Y	...	94cmx 137 cm

1/ Includes data for Puerto Rico, U.S. Virgin Islands, American Samoa, Guam, Johnston Atoll, Wake Island, Jarvis Island, Kingman Reef, Howland and Baker Islands, Northern Marianas.

The Status of Hydrographic Surveying and Nautical Charting World-Wide
Table 6

REGION : SOUTH AMERICA

COASTAL STATE No. 10 * Members IHO No. 7 + Have national Hydrographic Services	Area of EEZ km ² · 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships			CHARTS					PUBLICATIONS						maximum chart printing size	
					boats	surveyors	draftsmen	Schemed		Published			Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners	Other Publications		
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000								Latest Symbols/ /Catalogue
ARGENTINA * +	1164.5	50(5)	50(35)	-(60)	2 2	5 30	2 23	38 27	5 3	54 31	64 53	140 68	83 81	Y	Y	Y	Y	Y	Y	80cm x 120cm
BRAZIL * +	3168.4	40	40	20	5 14	200 200	15 20	62 53	- -	91 82	94 88	94 92	82 74	Y	Y	Y	Y	Y	Y	100cmx 140 cm
CHILE * +	2288.2	60(20)	40(80)	-(-)	2 ...	11 9	5 15	...	...	...	...	...	80 79	Y	Y	Y	Y	Y	Y	816mmx 1162mm
COLOMBIA	603.2																			
ECUADOR * +	1159.0	55(30)	5(-)	40(70)	1 1	10 22	7 7	2 1	- -	17 9	21 12	30 13	76 81	Y	Y	N	N	Y	...	93cmx 130cm
GUYANA	130.3																			
PERU * +	1026.9	...	...	...	1 3	...	...	...	...	...	...	...	...	Y	...	...	...	Y	...	...
SURINAME	101.2	30	-	70	- 3	2 4	1 1	1 1	- -	1 1	6 6	- 6	77 77	Y	N	N	N	Y	N	-
URUGUAY * +	119.3	80	20	-	- -	3 10	1 6	...	...	...	...	...	59 81	Y	Y	N	N	Y	Y	80cmx 115cm
VENEZUELA * +	363.8	40	40	20	1 ...	4 12	5 3	4 1	10 4	1 1	15 9	50 10	- 81	Y	Y	Y	N	Y	Y	1.07mx 1.07m

COASTAL STATE No. 11 * Members IHO No.8 + Have national Hydrographic Services	Area of EEZ km ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships	surveyors	cartographers	CHARTS					PUBLICATIONS						maximum chart printing size				
								boats	assistants	draftsmen	Schemed		Published			Latest Symbols/ /Catalogue	Tide Tables	Light Lists		Sailing Directions	Radio Signals	Notices to Mariners	Other Publications
											smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000								
CHINA * +	1355.8	25	75	incl.	26	2401/	601/	66	39	70	217	112	76	Y	Y	Y	N	Y	...	700mmx			
					36	incl.	incl.	60	39	64	203	109	76							1140mm			
DEMOCRATIC KAMPUCHEA	55.6																						
DEMOCRATIC PEOPLE'S REPUB. OF KOREA	129.6																						
INDONESIA * +	5408.6	15(6)	20(10)	65(84)	2	12	4	55	-	183	50	81	78	Y	Y	Y	N	Y	Y	833mmx			
					1	21	13	55		183	50	81	83							1176mm			
JAPAN * +	3861.1	...	...	...	5	77	19	...	...	...	...	...	79	Y	Y	Y	Y	Y	Y	720mmx
					17	53	11	318	27	216	152	286	82							1060mm			
MALAYSIA * +	475.6	10	40	50	2	32	-	-	-	-	-	-	-	Y	N	N	N	Y	N	-			
					...	200	-	-	-	-	-	-	-							-			
PHILIPPINES * +	1786.0	70	10	20	3	21	10	12	-	76	47	42	-	Y	Y	Y	Y	Y	...	104cmx			
					6	38	60	12	-	76	47	37	83							148 cm			
REPUBLIC OF KOREA *	348.4	75	15	10	10	32	15	100	2 ² /	131 ² /	77 ² /	50 ² /	80	Y	Y	Y	Y	Y	...	90cmx			
					2	18	15	12		99	23	12	78							120cm			
SINGAPORE * +	0.3	90	10	-	-	11	4	-	-	3	11	7	77	Y	N	N	N	Y	N	720mmx			
					4	15	10	-	-	3	6	3	83							1020mm			
THAILAND * +	85.8	75	20	5	1	26	8	1	-	8	32	16	78	Y	Y	N	N	Y	...	72cmx			
					4	28	16	-	-	8	32	16	79							92cm			
VIET NAM	722.1																						

1/ Split 1/3:2/3

2/ Estimated data

Table 8

COASTAL STATE No. 20 * Members IHO No. 4 + Have national Hydrographic Services	Area of EEZ km ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships			CHARTS						PUBLICATIONS						maximum chart printing size	
					boats	assistants	draftsmen	Schemed			Published			Latest Symbols/ /Catalogue	Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners		Other Publications
								smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000	1:100 000 to 1:25 000	larger scale than 1:25 000									
BAHREIN +	5.1	50	40	10	-	5	2	-	-	-	4	2	-	-	N	N	N	N	N	Y	-
BANGLADESH +	76.8	...	...	...	3	35	...	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BURMA +	509.5				8	incl.									Known to have a Hydrographic Organization at Rangoon						
DEMOCRATIC YEMEN	550.3																				
DJIBOUTI	6.2																				
ETHIOPIA	75.8																				
INDIA +	2014.9	5	23.5	71.5	8	63	21	76	74	139	230	97	80	Y	N	Y	N	Y	Y	80 cm x 125 cm	
IRAN (ISLAMIC REPUBLIC OF) + 1/	155.7				....	156	44	38	27	44	78	29	82								
IRAQ	0.7																				
JORDAN	0.7																				
KUWAIT	12.0																				

1/ Note: Iran (Islamic Republic of) is known to have a new project to develop its Hydrographic Organization.

REGION : SOUTH ASIA

The Status of Hydrographic Surveying and Nautical Charting World-Wide
Table 8 (cont.)

COASTAL STATE No.	Area of EEZ km ² . 10 ³	% Adequately surveyed	% requiring resurvey	% not surveyed	ships			CHARTS					PUBLICATIONS						maximum chart printing size		
					boats	assistants	draftsmen	Schemed		Published			tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners	Other Publications			
								surveyors	cartographers	smaller scale than 1:300 000	scale 1:300 000	1:300 000 to 1:100 000								1:100 000 to 1:25 000	larger scale than 1:25 000	Latest Symbols/ /Catalogue
MALDIVES	959.1																				
OMAN ^{1/}	561.7																				
PAKISTAN * +	318.5	20	80	0	3 ...	21 27	5 10	4 1	- -	9 1	12 7	2 ...	- -	Y	N	N	N	Y	N	762mm x 1067mm	
QATAR	24.0																				
SAUDI ARABIA	186.2																				
SRI LANKA * ^{1/} +	517.4																				
SUDAN	91.6	-	-	100	- 1	5 6	2 65	- -	- -	- -	- -	- -	- -	N	N	N	N	N	N	1:500 000 x	
UNITED ARAB ^{1/} EMIRATES	59.3																				
YEMEN	33.9																				

^{1/} Sri Lanka, Oman and United Arab Emirates are known to have new projects to develop Hydrographic Organizations.

III
STATISTICAL ANALYSIS

Table 9

REGION	Response		EEZ		HOs	Personnel		Vessels		Area Charted			Charts (Schemed/Published)					Publications								
	No. of Coastal States	No. of Responses	Total Area of EEZ (km ² x 10 ³)	% of EEZ area for which data reported		Total No. of Trained Personnel	% of which are field staff	Survey Vessels	Small Craft	% adequately surveyed	% requiring re-survey	% not surveyed	Smaller scale than 1:300,000	Scale 1:300,000	1:100,000 to 1:300,000	1:25,000 to 1:100,000	Larger scale than 1:25,000	HOs having chart printing facilities	Symbols	Catalogue	Tide Tables	Light Lists	Sailing Directions	Radio Signals	Notices to Mariners	Other Publications
Africa	29	8	110853.1	61	4	323	20	4	8	22.8	33.9	43.3	18 18	- -	37 37	18 18	16 15	3			4	1	1	1	8	1
Australasia	4	4	11696.1	100	4	222	67	5	4	10.0	7.8	82.2	72 32	105 54	734 103	172 115	85 57	2			3	1	-	-	2	1
Europe and Mediterranean	34	21	24228.8	96	26	1896	62	97	101	56.5	28.8	14.7	1285 1268	306 299	2446 2333	2756 2577	2203 2029	21			13	20	16	13	23	16
North America	23	6	18979.6	68	7	610	56	23	103	47.3	27.7	25.0	255 204	67 33	364 225	1514 1194	1212 1123	4			5	4	4	2	5	1
Pacific	9	2	8146.9	28	2	17	76	-	3	5.4	1.0	93.6	3 3	- -	10 10	16 14	14 14	2			-	1	-	-	2	-
South-East Asia	11	8	14228.9	94	8	1069	77	49	70	45.7	25.0	29.3	552 457	68 68	687 649	586 513	594 544	7			8	6	5	3	8	2
South America	10	7	10124.8	93	8	639	82	12	23	41.0	31.0	28	140 116	18 10	219 179	349 317	658 527	6			8	6	4	3	8	5
South Asia	20	4	6159.4	41	8	469	68	14	11	18.8	35.9	45.3	80 39	74 27	148 45	246 85	101 29	3			2	-	1	-	2	2

HO= Hydrographic Organization

EEZ= Exclusive Economic Zone

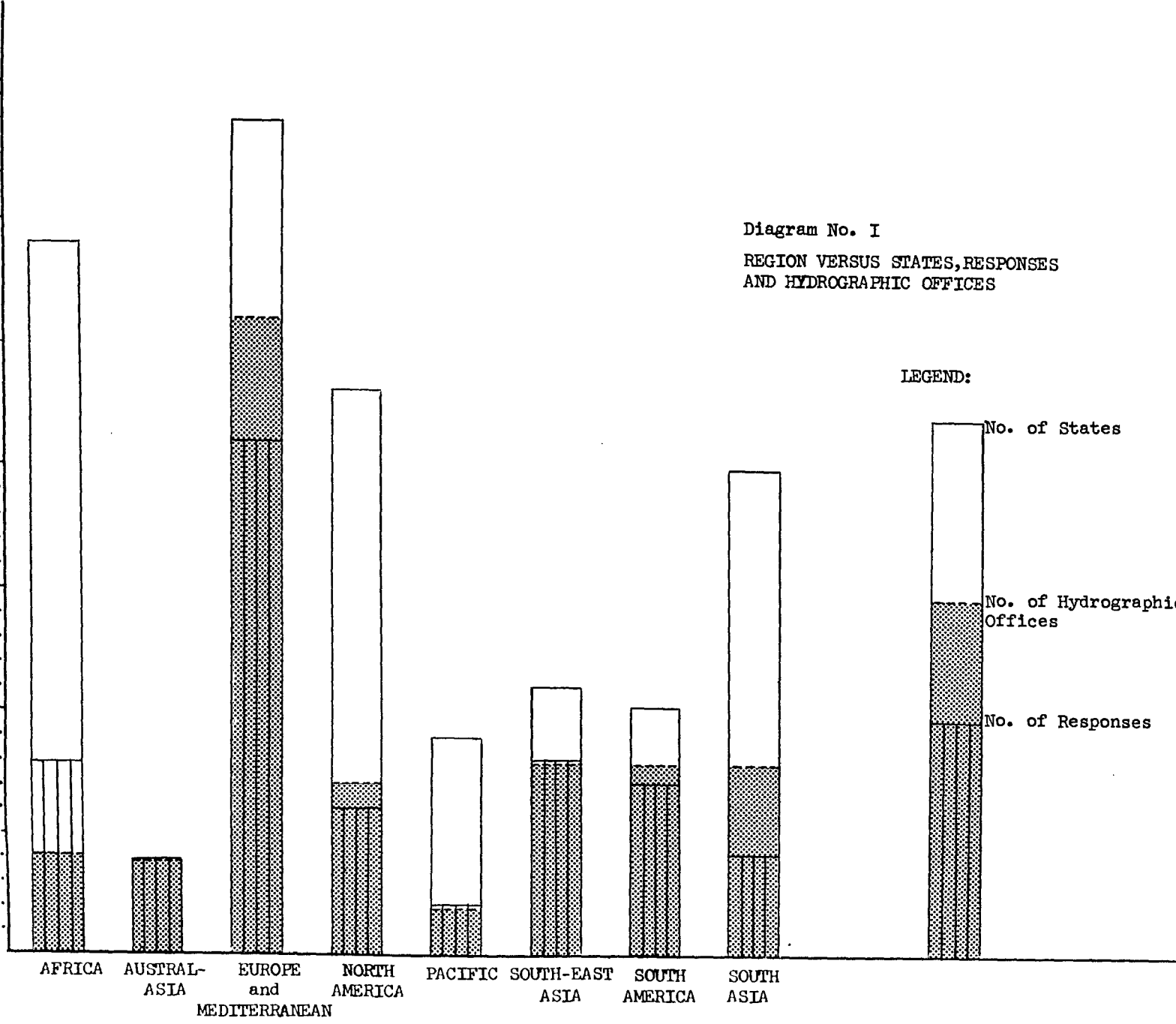
No. of Coastal States and Hydrographic Offices

30
20
10

Diagram No. I
REGION VERSUS STATES, RESPONSES
AND HYDROGRAPHIC OFFICES

LEGEND:

No. of States
No. of Hydrographic Offices
No. of Responses



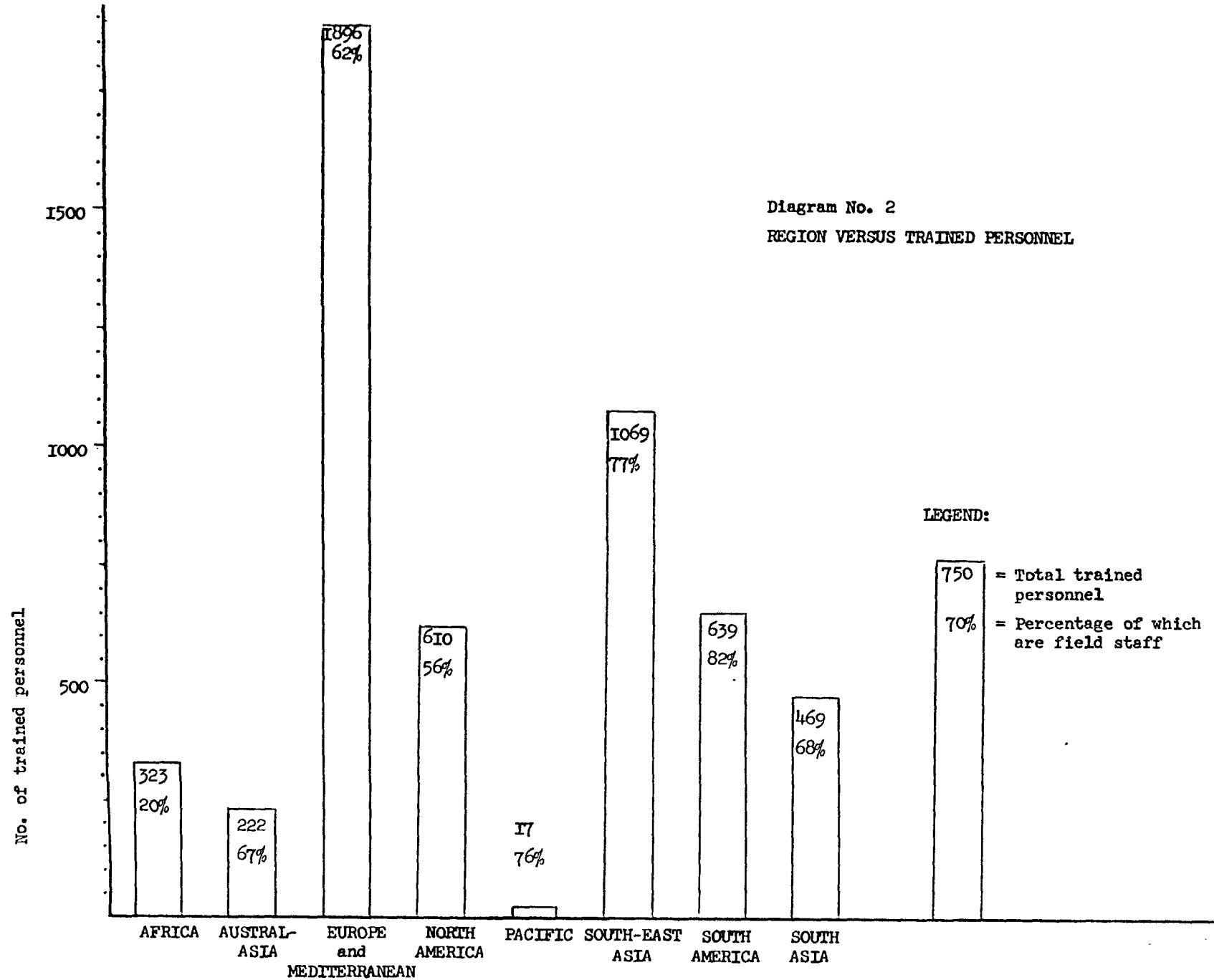
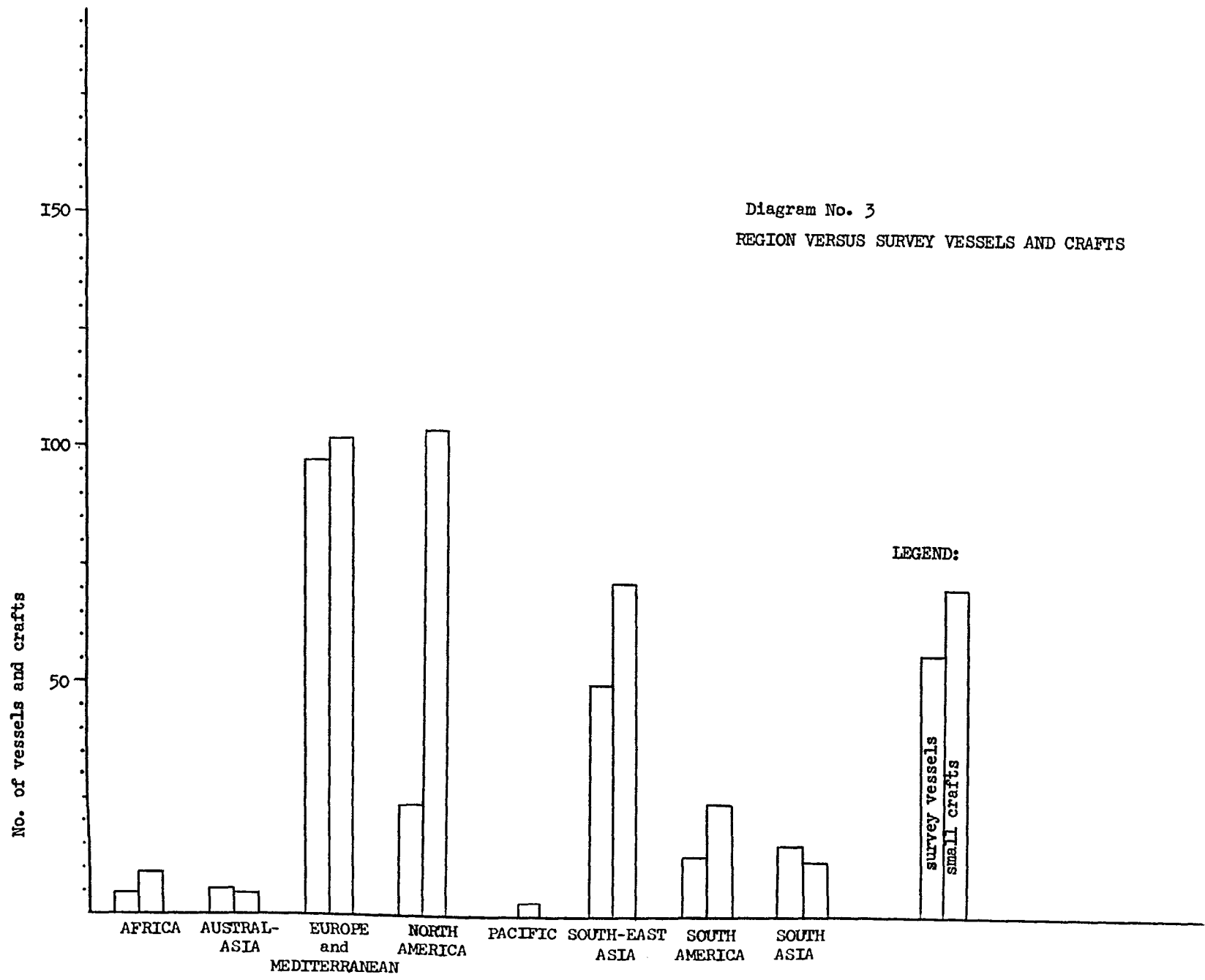


Diagram No. 3
 REGION VERSUS SURVEY VESSELS AND CRAFTS

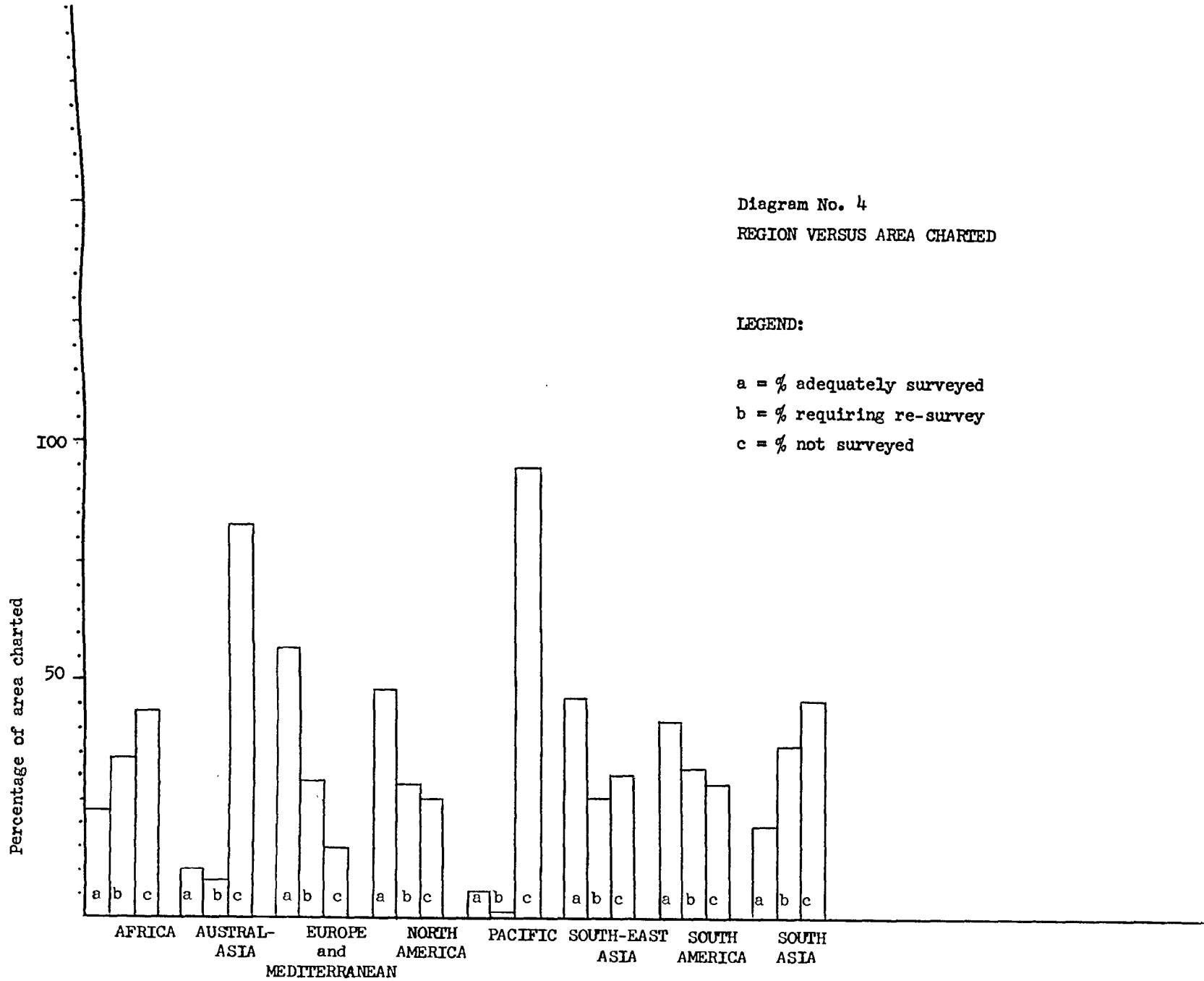


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Diagram No. 4
REGION VERSUS AREA CHARTED

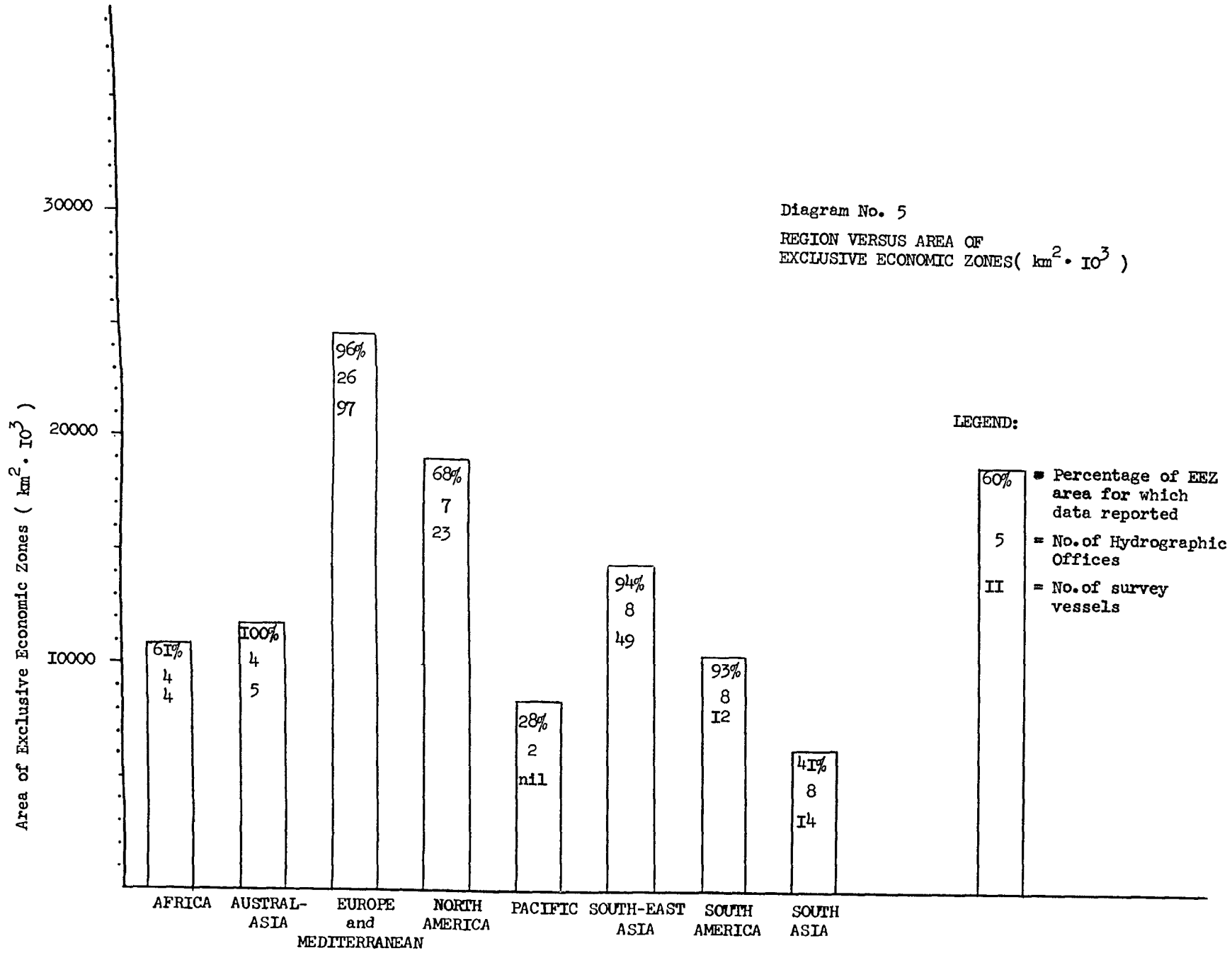
LEGEND:

- a = % adequately surveyed
- b = % requiring re-survey
- c = % not surveyed



...

Diagram No. 5
 REGION VERSUS AREA OF
 EXCLUSIVE ECONOMIC ZONES($\text{km}^2 \cdot 10^3$)



LEGEND:

- Percentage of EEZ area for which data reported
- 5 = No. of Hydrographic Offices
- 11 = No. of survey vessels

Annex

QUESTIONNAIRE
ON THE STATUS OF
HYDROGRAPHIC SURVEYING AND NAUTICAL CHARTING WORLD WIDE

COUNTRY (or Territory) :

DATE of validity of information :

1. The country has a national hydrographic organization :

YES

NO

2. By agreement(s), hydrographic surveys of national waters are carried out by : (NOTE: Enter name of another country or "Private contractors")

Questionnaire p. 2

A. HYDROGRAPHY

1. The state of hydrographic surveying in the area of the national maritime zone :-
- (a) Percentage of area which is surveyed adequately for present requirements :
 - (b) Percentage of area which requires re-survey at larger scale or to modern standards :
 - (c) Percentage of area which has never been systematically surveyed :
- Total : 1 0 0 %

2. If primary responsibility is accepted for hydrographic surveying in areas external to the national maritime zone — give limits :

State of surveying such area :

- (a) Percentage of area which is surveyed adequately for present requirements :
 - (b) Percentage of area which requires resurvey at larger scale or to modern standards :
 - (c) Percentage of area which has never been systematically surveyed :
- Total : 1 0 0 %

HYDROGRAPHY (continued)

Note: Question A2 is intended to provide information concerning areas for which a developed nation may have accepted responsibility, by agreement, on behalf of a developing country.

3. Survey vessels and launches available for surveying :

Displacement or length	Number of vessels	Number of hydrographers	Number of assistants

4. Number of trained hydrographic personnel employed by the national hydrographic service :

- a. Hydrographic surveyors
- b. Assistants / Survey recorders

Questionnaire p. 4

B. NAUTICAL CHARTING

1. If the area covered or intended to be covered by national charts extends beyond the national maritime zone, indicate the limits :

2. The number of charts schemed for the complete national series and the number which have already been published :

- a. Smaller scale than 1/300 000
- b. Scale 1/300 000
- c. 1/100 000 to 1/300 000
- d. 1/25 000 to 1/100 000
- e. Larger scale than 1/25 000

Schemed		Published	
"		"	
"		"	
"		"	
"		"	
Total:		Total:	

Note : These tables are intended to provide the means of assessing the overall status of world charting without regard to the standard of the surveys on which the charts are based; nevertheless, it will be assumed that the scale of the published chart is an indication of the scale of the survey on which it is based.

3. The date of the latest Catalogue/List of Charts and List of Symbols and Abbreviations used on National Charts :

Catalogue

Symbols & Abbreviations

Questionnaire p. 5

4. Nautical documents published nationally :

	(YES/NO)		(YES/NO)
a. Tide Tables	<input type="checkbox"/>	d. Radio signals	<input type="checkbox"/>
b. Light Lists	<input type="checkbox"/>	e. Notices to Mariners	<input type="checkbox"/>
c. Sailing Directions	<input type="checkbox"/>	f. Others	<input type="checkbox"/>

5. The number of trained cartographers and/or cartographic draftsmen employed by the national cartographic authority :

- a. Cartographers
- b. Draftsmen

6. Does the national hydrographic service print its own charts ?

YES NO

7. The maximum size sheet which can be printed :
