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Ad Hoc Expert Group Meeting on Maritime
Hydrographic Surveying and Nautical Charting
8-12 May 1994
Amman and Aqaba

FINAL REPORT

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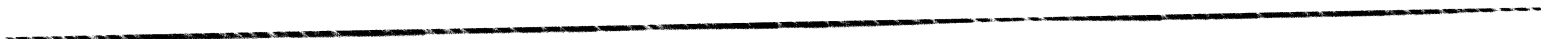


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A. ATTENDANCE AND ORGANIZATION OF WORK

1. *Opening and duration of the meeting*

1. The transport and communications work programme of the Economic and Social Commission for Western Asia (ESCWA) for the biennium 1994-1995 aims, *inter alia*, at convening an ad hoc Expert Group Meeting on Maritime Hydrographic Surveying and Nautical Charting. The Expert Group Meeting was held from 8 to 12 May 1994 in Amman and Aqaba, Jordan.

2. The main objective of the Expert Group Meeting was to discuss the findings of an ESCWA study on the status of maritime hydrographic surveying and nautical charting in the ESCWA region,¹ and to establish the foundations for future regional action by ESCWA and the International Hydrographic Bureau (IHB) as well as by ESCWA member countries.

3. The Expert Group Meeting also covered technical topics such as positioning, underwater acoustics, echo sounding, the Global Positioning System (GPS), laser positioning, data acquisition and processing, side-scan sonar, swathe sounding and airborne laser hydrography as well as methods of nautical charting and the possibility of establishing hydrographic offices in the ESCWA region.

2. *Attendance*

4. Experts from ESCWA member countries, international and regional organizations and companies concerned were invited to attend the Expert Group Meeting in their individual capacities and to provide collective advice to the ESCWA secretariat. The Expert Group Meeting was attended by experts from the following ESCWA members: Egypt, Iraq, Jordan, Lebanon, Oman and Palestine. Experts from Canada, Germany, the Netherlands, Sweden and the United Kingdom of Great Britain and Northern Ireland also took part. Representatives of the International Hydrographic Bureau (IHB) and the Arab Maritime Academy attended the Expert Group Meeting as well. Specialists from Atlas Elektronik GmbH (Germany) and Racal Positioning Systems, Ltd. (United Kingdom) were present at the Expert Group Meeting for technical discussions and equipment demonstrations.²

3. *Election of officers*

5. The Expert Group Meeting unanimously elected Mr. Oqla Dhaimat (Jordan) as Chairman, Mr. Adam Kerr (IHB) as Vice-Chairman and Messrs Hans Rohde (IHB) and Mahmoud El-Hibir (ESCWA) as Rapporteurs.

B. AGENDA

6. On 8 May 1994, the Expert Group Meeting adopted the following agenda:

1. Opening of the meeting.
2. Election of officers.
3. Adoption of the agenda.
4. Status of maritime hydrography in the ESCWA region.
5. The International Hydrographic Organization.
6. Hydrographic surveying: an overview.

¹ Economic and Social Commission for Western Asia, *Maritime Hydrographic Surveying, Nautical Charting and Maintenance of Hydrographic Surveying Equipment in ESCWA Countries* (E/ESCWA/TCD/1993/17).

² For the names of the participants in the Expert Group Meeting, see annex I.

7. Daily equipment demonstrations.
8. Underwater acoustics, echo sounding.
9. GPS introduction and standard applications.
10. Introduction to nautical cartography.
11. GPS advanced applications and impact on hydrography.
12. Swathe sounding.
13. Maritime cartography: present and future.
14. Airborne laser hydrography.
15. Introduction of ECDIS
16. Chart standardization - the International Chart (INT).
17. Establishment of a National Hydrographic Office in Oman.
18. Other matters.
19. Recommendations and final report.
20. Closing session.

C. ACCOUNT OF PROCEEDINGS

7. The Expert Group Meeting was opened by the Director-General of the Royal Jordanian Geographic Centre, Mr. Oqla Dhaimat, who, in his opening statement, informed the Expert Group Meeting of the Centre's activities and underlined the importance of hydrographic surveying and nautical charting as part of the future activities of the Centre.

8. On behalf of the Executive Secretary of ESCWA, the Chief of Administration, in his capacity as Officer-in-Charge of ESCWA, read out the Executive Secretary's statement to the Expert Group Meeting, welcoming the participants and highlighting the particulars of ESCWA work programmes in general and of transport issues in particular.

9. The Officer-in-Charge of the Transport and Communications Division of ESCWA then made a speech in which he welcomed the participants and underlined the main purpose and objectives of the Expert Group Meeting. He also elaborated on ESCWA activities in the field of transport, including maritime hydrography.

10. His Excellency Mr. Adib Halaseh, the Minister of Transport of Jordan, also welcomed the participants, underlined the importance of hydrographic surveying and proposed the establishment of a regional office for hydrographic surveying and nautical charting. He affirmed the readiness of Jordan to host the office and offer all facilities needed, with the cooperation of ESCWA and IHB.

11. The ESCWA officer responsible for the programme element on maritime transport, including the topic of the Expert Group Meeting, explained the main frame and findings of the ESCWA technical publication on maritime hydrographic surveying, nautical charting and maintenance of hydrographic surveying equipment.³ He also indicated the possibilities for future action at the ESCWA regional level to improve the status of hydrographic surveying and nautical charting.

12. In his first lecture, Mr. Adam Kerr, Director of IHB, explained the history and development of the International Hydrographic Organization (IHO). Additionally, he gave an overview of the major activities in which the organization was currently engaged. In his second lecture, he familiarized the participants with the basic principles and the current status of Electronic Chart Display and Information Systems (ECDIS).

³ See note 1.

13. Mr. Hans Rohde, Professional Assistant, IHB, presented an overview of hydrographic surveying to provide the participants with the basic information on the most important fields of hydrography.
14. Mr. Ingo Harre of Atlas Elektronik, GmbH, lectured on the physics of underwater acoustics and their applications to echo sounding. In his second lecture, he gave a detailed overview of multi-beam swath sounding and related data-processing systems.
15. Mr. Dave Wells of the University of New Brunswick, Canada, presented a lecture on the basic principles of the Global Positioning System (GPS) and standard applications of it. In his second lecture, he explained advanced applications of the system and their impact on hydrography.
16. Mr. J.G. Ferwerda of the Hydrographic Service, Royal Netherlands Navy, started with an introduction to the governing principles of nautical cartography, followed by a lecture covering the current and future procedures of nautical-chart production. His final lecture concerned chart standardization, with special emphasis on the International Chart scheme (INT Charts).
17. Airborne laser hydrography was introduced by Mr. Peter Sundberg of the Swedish Hydrographic Department, Sweden, with a videotape and a lecture.
18. Mr. Thomas Stjaernerud of the Swedish Hydrographic Department followed, explaining how Sweden intended to survey its waters in the shortest possible time using a mixture of laser, multi-beam and multi-channel surveying equipment.
19. Messrs Stephen Bennett and Thani Al-Mahrouki of the Royal Navy of Oman presented a paper on the establishment of a National Hydrographic Office in Oman. The representatives of Oman undertook to pursue the possibility of establishing a Regional Hydrographic Commission in the area through the appropriate diplomatic channels. Within the same framework, the Expert Group Meeting felt that the Royal Jordanian Geographic Centre in Amman could constitute another possible ground on which to initiate ESCWA regional or Middle Eastern activities in the field of hydrographic surveying and nautical charting.
20. In all lectures, time was allowed for questions and discussions by the participants.
21. Live demonstrations of hydrographic surveying equipment (positioning, depth measurement and processing) took place at the Port of Aqaba for a total of 12 hours during the Expert Group Meeting. Participants had the opportunity to meet representatives of manufacturers outside the meetings to discuss certain questions in depth.
22. The Expert Group Meeting expressed its gratitude to Racal Positioning Systems, Ltd. (United Kingdom) and Atlas Elektronik, GmbH (Germany) for providing the equipment and personnel free of charge.

D. RECOMMENDATIONS

23. The following recommendations were made at the Expert Group Meeting:
 - (a) ESCWA member States were invited to make every effort to strengthen regional cooperation in hydrography and nautical charting;

(b) The proven system of IHO Regional Hydrographic Commissions⁴ should be followed, bearing in mind that the characteristics and the hosting of regional hydrographic commissions are subject to rotation;

(c) In establishing hydrographic facilities, States should initially concentrate on training nationals according to IHO and FIG (Fédération Internationale des Géomètres) standards of competence;

(d) The International Hydrographic Bureau (IHB) and other relevant organizations should encourage devising and conducting training courses in the ESCWA region and ideally satisfying all regional needs;

(e) Nations establishing new hydrographic capabilities comply with all relevant IHO standards. In particular, in order to facilitate the exchange and use of data in digital form, IHO S-57 (digital data transfer standards) should be adhered to;

(f) Together with the development of their national manpower, States should procure the equipment necessary to become self-sustaining in hydrographic surveying;

(g) The establishment of nautical charting capability should be considered in the light of economic and other factors, but States should, in all cases, ensure the promulgation of Maritime Safety Information (MSI). In the event that individual States decide to develop nautical charting capabilities, it is recommended that they produce charts according to the IHO system of INT Charts;

(h) ESCWA member States should take a well coordinated approach towards the establishment of national hydrographic facilities, such as through a national hydrographic committee⁵ to avoid duplication of efforts and waste of resources.

⁴ Ibid.

⁵ Ibid.

*Annex I***LIST OF PARTICIPANTS****EGYPT**

Mr. Salah Eldin Ali Moukhtar, Ministry of Maritime Transport

IRAQ

Mr. Talib Jasim Mohammad, General Establishment of Iraqi Ports

JORDAN

Mr. Nidal Al-Sagarat, Royal Jordanian Geographic Centre
 Mr. Maddallah Al-Ka'abneh, Royal Jordanian Geographic Centre
 Mr. Samir O. Abbadi, Royal Jordanian Geographic Centre
 Mr. Jaser Atieh, Royal Jordanian Geographic Centre
 Col. Samih Hantoush, Air Force (first and last day only)
 1st Lieutenant Muneeb Mohammad Hamdan, Civil Defence
 Col. Sofian Jaradat, Royal Jordanian Navy
 Capt. Ali Said, Royal Jordanian Navy
 Capt. Hani Ghamar, Royal Jordanian Navy
 Capt. Abdulwahab Yousuf, Royal Jordanian Navy
 Capt. Zuhair Zgool, Royal Jordanian Navy
 1st Lieutenant Mohamed Hamdan, Royal Jordanian Navy
 1st Lieutenant Zaidoun Ali Mustafa, Royal Jordanian Navy
 Lieutenant Maher Muhammad, Royal Jordanian Navy
 Lieutenant Muhammad Qasim, Royal Jordanian Navy
 Lieutenant Saleh Dhahi, Royal Jordanian Navy
 Lieutenant Muhammad Al-Nairat, Royal Jordanian Navy
 Lieutenant Ahmed Fahed, Royal Jordanian Navy
 Capt. Wahib Sharif Abdalah, Ports Corporation, Aqaba
 Capt. Ibrahim Abu Shaikha, Ports Corporation, Aqaba
 Capt. Khalid Al-Smadi, Ports Corporation, Aqaba
 Capt. Fawzi Jamalia, Ports Corporation, Aqaba
 Mr. Mohammad Abdalah Al-Azab, Aqaba Region Authority
 Mr. Mahmood R. Ismail, Aqaba Region Authority
 Mr. Yousef Siam, University of Jordan
 Mr. Adel Mari', Jordan Electricity Authority
 Mr. Ahmad Kato, Jordan Electricity Authority
 Mr. Tareq Al-Najjar, Marine Science Station
 Mr. Okbah Saleh Sheikh Mustafa, Phosphate Mines
 Mr. Sameer Abdel-Latif, Potash Co.

LEBANON

Mr. Salim Matta, Ministry of Transport

OMAN

Mr. S.H.G. Bennett, Royal Navy of Oman
 Mr. Thani Al-Mahrouki, Royal Navy of Oman

PALESTINE

Mr. Najeh Tameem, Al-Najah National University, Nablus, West Bank
Mr. Omar Zaidah, Technical and advisory committees of the peace negotiations, Gaza Strip

CANADA

Mr. Dave Wells, University of New Brunswick

THE NETHERLANDS

Mr. J.G. Ferwerda, Hydrographic Office, Royal Netherlands Navy

SWEDEN

Mr. Peter Sundberg, Swedish Hydrographic Department
Mr. Thomas Stjaernerud, Swedish Hydrographic Department

INTERNATIONAL HYDROGRAPHIC BUREAU

Mr. Adam J. Kerr
Mr. Hans P. Rohde

ARAB MARITIME TRANSPORT ACADEMY (AMTA)

Mr. Rifaat Rashad

ATLAS ELEKTRONIK GmbH (GERMANY)

Mr. Ingo Harre
Mr. Hermann Kremer

RACAL POSITIONING SYSTEMS LTD. (UNITED KINGDOM)

Mr. Ed McMullen
Mr. Gary Flemming

*Annex II***ORGANIZATION OF WORK**Amman, Sunday, 8 May 1994

8.30 a.m. - 9 a.m.	Registration.
9 - 10 a.m.	Opening statements.
10 - 10.30 a.m.	Coffee break.
10.30 - 11 a.m.	Election of officers and adoption of the agenda.
11 - 11.30 a.m.	Status of maritime hydrography in the ESCWA region, presented by ESCWA.
11.30 - 12.15 p.m.	The International Hydrographic Organization (Mr. Kerr).
12.15 - 1 p.m.	Hydrographic Surveying, an overview (Mr. Rohde).
7.30 p.m.	Departure from the hotel for Queen Alia International Airport by bus.

Aqaba, Monday, 9 May 1994

9.30 a.m. - 10.15 a.m.	Underwater Acoustics, Echo Sounding (Mr. Harre).
10.15 - 11 a.m.	GPS Introduction and Standard Applications (Mr. Wells).
11 - 11.15 a.m.	Coffee Break.
11.15 - 12 noon	Introduction to nautical cartography (Mr. Ferwerda).
12 - 2 p.m.	Lunch Break.
2 - 2.45 p.m.	GPS advanced applications and impact on hydrography (Mr. Wells).
2.45 - 3.30 p.m.	Swathe Sounding (Mr. Harre).
3.30 - 3.45 p.m.	Coffee Break
3.45 - 4.30 p.m.	Maritime cartography: present and future (Mr. Ferwerda).
4.30 - 5.15 p.m.	Airborne laser hydrography (Mr. Sundberg).
8.30 p.m.	Dinner invitation by the Ports Corporation, Aqaba.

Aqaba, Tuesday, 10 May 1994

8.30 a.m. - 12.30 p.m.	Equipment demonstrations.
12.30 - 2 p.m.	Lunch break.
2 - 6 p.m.	Equipment demonstrations.
8.30 p.m.	Dinner invitation by Aqaba Region Authority.

Aqaba, Wednesday, 11 May 1994

8.30 a.m. - 12.30 p.m.	Equipment demonstrations.
12.30 - 2 p.m.	Lunch break.
2 - 2.45 p.m.	Introduction of ECDIS (KERR).
2.45 - 3.45 p.m.	Chart standardization - The International Chart (INT) (Mr. Ferwerda).
5.15 - 6 p.m.	Introduction to the Port of Aqaba by Mr. Draid Mahasneh, Director-General; and tour of Aqaba port by Ports Corporation, Aqaba.
6 - 7.15 p.m.	Sea-tour by the Coast Guard.
8.30 p.m.	Informal get-together at the invitation of ESCWA.
11 p.m.	Departure from hotel to Aqaba airport.

Amman, Thursday, 12 May 1994

9 - 9.45 a.m.	Establishment of a National Hydrographic Office in Oman (Mr. Bennett).
9.45 - 11.15 a.m.	Discussion and adoption of the final report.
11.15 - 11.30 a.m.	Coffee break.
11.30 - 12.15 p.m.	Closing session.
3 - 7 p.m.	Trip to the Dead Sea courtesy of the Jordanian Phosphate Company.
7.30 p.m.	Dinner invitation by the Jordanian Phosphate Company.



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