



**PAKISTAN**

**NATIONAL REPORT**

**5th MEETING**

**ROPME SEA AREA HYDROGRAPHIC COMMISSION (RASHC)**



**Riyadh, Saudi Arabia**

**04-06 March 2013**

**PAKISTAN NAVY HYDROGRAPHIC DEPARTMENT**

## **HYDROGRAPHIC DEPARTMENT OF PAKISTAN** **(NATIONAL REPORT)**

1. Pakistan Navy Hydrographic Department (PNHD) was established in 1949 and became member of IHO in 1957. As a National Hydrographic Organization, the department is primarily responsible for conducting hydrographic surveys of coastal and offshore waters of Pakistan and publishing nautical charts and relevant publications to fulfill national and international requirements. The department is well equipped to undertake surveys as per IHO standards and has already published a series of International / National charts for the entire coast of Pakistan. PNHD comprises Charting Centre, Chart Depot, ENC Division, HQ Navarea-IX, Survey Vessel/boats and Hydrographic School. Since 1976, Pakistan is also shouldering the responsibility of Navarea IX coordinator for promulgation of Maritime Safety Information.

### **HYDROGRAPHIC SURVEYS**

2. Pakistan's coast is approximately 990 Kms long and by the virtue of its unique characteristics, is divided into 02 parts; Makran coast & Sindh coast. The later lies from east of Karachi till Pakistan India border at Sir Creek and is mainly comprised deltaic regions because of out fall creeks of Indus river. Whereas, Makran coast lies from west of Karachi to Gawatar Bay bordering with Iran, consisting of sandy shores and sedimentary cliffs.

3. PN Hydrographic Department is responsible for undertaking hydrographic survey activities in Pakistani waters. Hydrographic cum oceanographic survey vessel BEHR PAIMA conducts survey of coastal as well as deep waters. Continuous efforts have been made to survey critical areas for safe navigation within Pakistani waters. The department is presently involved in fresh surveys of important areas, which includes deep sea bathymetric surveys of international shipping routes. Detailed information in this regard is as under

- a. **Coverage of New Surveys.** Survey activities from coast to 200m offshore is being undertaken to improve the coverage in A1

category area and about 90% coverage is complete. Nautical charts of deep sea area that falls under A2 category are relatively old. Work to complete deep sea (> 200m) area using new survey equipment and techniques is in progress at a moderate pace due to survey commitments in high priority areas. However, a considerable portion of deep sea area has been recently surveyed offshore Indus delta. The same will be utilized to update small scale charts of major shipping routes.

b. **New Technologies / Equipment.** SV BEHR PAIMA is well equipped to undertake all kind of hydrographic and physical oceanographic surveys. State-of-the-art sensors like multi-beam echo sounder, deep sea echo sounder, multi frequency digital side scan sonar, RTK & Satellite based DGPS, SV Probe, CTD, Moving Ship Velocity Profiler, Current Meters and Automatic Tide Gauges etc equipment is part of the ship's inventory.

#### **NEW CHARTS AND UPDATES**

4. **ENCs** ENC division was established in 2005 and since then considerable headway has been made in ENC production. Detail of the same is given below:

a. ENCs of all major ports i.e Karachi Harbour, Port Qasim and Gwadar Deep Water Port are available to mariners.

b. Small scale ENC cells of INT-751 (Bombay to Masqat) and INT 7019 (Karachi to Ras Al-Hadd), covering shipping route through Arabian Sea, are available to mariners. However, Paper chart of INT- 7312 (Karachi to Sir Creek) has been produced recently. The same is under validation process and it will be available to mariners shortly.

c. Coastal charts that can facilitate mariners and fall within the major shipping routes have been converted to ENCs. Additional ENCs are also being produced.

- d. **ENC Distribution Method.** Pakistan being member of IC-ENC is utilizing its services for data validation and distribution of ENCs. Necessary quality checks of ENCs are conducted prior forwarding to IC-ENC for validation through different softwares which improves the quality of products.
  - e. **RNCs** It may be highlighted that PNHD is neither producing nor has plans to produce RNCs.
5. **INT /National Paper Charts.** Pakistan Navy Hydrographic Department has published 41 charts of different scales covering entire coast and off shore waters of Pakistan. These are kept up to date. Out of these, 8 charts presently form part of INT area "I & J".

### **NEW PUBLICATIONS & UPDATES**

6. **New / Updated Publications.** Following publications are printed by the Hydrographic Department on annual, and weekly basis.
  - a. Weekly Notices to Mariners (NTMs).
  - b. Annual Summary of NTMs
  - c. Annual Pakistan Tide Table.
  - d. Annual Sun & Moon Rise / Set Table.
7. In addition to the printed version of said documents, up-to-date information on navigational warnings and NTMs are also available on website [www.paknavy.gov.pk/hydro](http://www.paknavy.gov.pk/hydro)). Moreover, issuance of a List of Lights of national waters is planned.

### **MARITIME SAFETY INFORMATION**

8. Pakistan being Coordinator is responsible for transmission of MSIs in NAVAREA IX. Under GMDSS, following two types of MSI are issued:
  - a. NAVAREA IX warnings through International Safety Net.
  - b. Coastal warnings through NAVTEX (Presently Non-ops)

9. **NAVAREA IX Warnings** NAVAREA IX broadcast is passed daily at 0800 UTC through INMARSAT using LES Perth. Whereas, unscheduled broadcast for urgent navigational warnings is done at any time. A numerical list of all enforced NAVAREA IX warnings is broadcasted each Saturday. A reprint of all NAVAREA IX warnings issued during a week is also included in the weekly edition of Pakistan Notices to Mariners.

10. **Coastal Warnings.** Coastal warnings are broadcasted on NAVTEX on 518 kHz from GMDSS Coast Radio Station, Karachi. These Warnings are broadcasted six times a day i.e. after every four hours at 0230, 0630, 1030, 1430, 1830 and 2230 UTC. Weather messages are transmitted at 0630 and 1830 UTC daily. NAVTEX setup is being upgraded and warnings are issued using alternate available options.

11. **Monitoring of MSI Broadcast.** In order to ensure the integrity of MSIs being received by mariners, Coordinator NAVAREA IX monitors its broadcasts by placing an INMARSAT C terminal at shore. Similarly, NAVTEX broadcasts are also monitored.

12. **Problems Encountered.** Navigational hazards occurring in the region are effectively communicated by relevant state, for further issuance of Nav warnings through Fax, email and telephone. The most effective mean has been through e-mail. However, few countries are not maintaining communication through e-mail and use other means such as fax and post, which at times causes delays.

### **HYDROGRAPHIC SURVEYING & NAUTICAL CHARTING WORLD WIDE (S-55)**

13. PNHD regularly assesses status of hydrographic surveying & nautical charting of all navigable waters within the limits of national jurisdiction and the EEZ. Based on this assessment, S-55 i.e Hydrographic Surveying and Nautical Charting World Wide is kept updated. Composite contents of the same are reproduced at Annex A.

## **CAPACITY BUILDING**

14. In order to maintain quality of hydrographic products as per recognized international standards, Pakistan Navy Hydrographic Department attaches special emphasis on capacity building aspect of officers and men. Accordingly, officers undergo Cat B course from Japan/Australia and Cat A from UK as they progress in the hydrographic service. Officers are also trained in traditional and electronic cartography from renowned international institutes. Sufficient training facilities are available to train the survey recorders within country also.

15. Pakistan Navy Hydrographic Department can offer assistance to regional countries in following areas:

- a. Hydrographic surveys.
- b. Geodetic and bathymetric data processing / production of charts.
- c. Basic Survey Recorder / Technician Course.
- d. Assistance in ENC production line procedures and quality management system.
- e. Handling of MSIs
- f. Cat B Hydrographic Course

16. PN Hydrographic School contributing a lot to trained regional countries survey officers and technician in various cadres. Following courses were conducted in the last 5 years:

<b><u>Country</u></b>	<b><u>No. of Candidates</u></b>	<b><u>Year</u></b>	<b><u>Course Name</u></b>
Nigeria	01	2008	Basic Cartographic Officers Course
Azerbaijan	01	2009	Basic Hydrography Officers Course
Sri Lanka	01	2009	Basic Hydrography Course
UAE	01	2009	Basic Hydrography Course
Sri Lanka	02	2009	Basic Cartographic Officers Course
Bangladesh	01	2009	Advance Professional Course
Sudan	01	2010	Advance Professional Course

Sudan	01	2010	Basic Hydrography Officers Course
Sri Lanka	01	2010	Basic Hydrography Officers Course
Nigeria	01	2010	Basic Hydrography Officers Course
Bangladesh	01	2010	Basic Hydrography Officers Course
Azerbaijan	01	2011	Basic Hydrography Officers Course
Sri Lanka	02	2012	Basic Cartographic Officers Course
Sudan	02	2012	Basic Cartographic Officers Course

## **OCEANOGRAPHIC ACTIVITIES**

17. **General.** Oceanographic activities in Pakistan are carried out in collaboration with National Institute of Oceanography (NIO) and marine universities. Oceanographic cruises are arranged in which scientists from both the organizations participate actively for various oceanographic observations and data collection. The processing of data is carried out at NIO, which is adequately equipped for undertaking such tasks. PN Hydrographic Department provides facilities of SV BEHR PAIMA for oceanographic cruises.

18. **Tide Gauge Network.** Pakistan is working on the installation of national network of highly precise, satellite aided, fully automated tide gauges along the coast. At present, three tide gauges i.e. at Karachi, Ormara and Gwadar are working and data is being transmitted. The data received from tide gauge network is being used for sea level measurements, tidal analysis for subsequent tide predictions and tsunami early warning etc. One more tide gauge is planned to be installed at Keti Bandar and data will be available on internet.

19. **Acquisition of New Survey Ship.** In view of the increasing requirement of oceanography and marine sciences, efforts are in hand to acquire an additional hydrographic cum oceanographic vessel.

## **OTHER ACTIVITIES**

20. **Participation in IHO Working Groups.** Pakistan actively participates in IHO working groups.

- a. Working Group on Special Publication (S-23).
- b. Chart Standardization and paper chart working group (CSPCWG)

- c. Advisory Board on the Law of the Sea (ABLOS)
- d. GEBCO Sub-Committee on Undersea Feature Names (SCUFN)

21. **Participation in Hydrographic Activities.** Pakistan Navy has successfully accomplished joint international surveys with various countries and organizations in support of regional capacity building. Salient are as under:

- a. Joint survey of Sir Creek with India in 2007.
- b. Joint survey of RSNF harbour at Jeddah, Saudi Arabia in 2007.
- c. Joint survey of Port Salalah approaches, Oman in 2007.
- d. Joint international Hydrographic survey around Bird and Denis Islands in Seychelles Waters from 19 Jan to 03 Feb 09.

22. **Meteorological data Collection.** Meteorological data from various sources including automatic weather station installed at the coast is acquired and maintained at met data bank of Pakistan coast and North Arabian Sea. Moreover, close liaison is maintained with Pakistan Met Department to monitor the weather changes.

23. **Dredging activities.** PNHD is also involved in dredging activities in order to address PN requirements. In this regard a Trailing Suction Hopper Dredger (TSHD) of 2,500 Ton capacity was acquired in 2008. The platform is being run affectively.

## **CONCLUSION**

24. PN Hydrographic Department is carrying out surveys of waters under national jurisdiction as per IHO standards. In addition, PNHD is actively participating in all national, regional and international maritime activities / forums. PNHD has completed the surveys of entire coast of Pakistan and has published relevant charts. At present, resurveys of critical areas and new surveys including deep sea surveys are being undertaken. As a coordinator of Navarea IX, responsibility for promulgation of navigational warnings is being effectively



fulfilled. In addition, ENC cells concerning major ports and small scale ENCs adequately covering shipping route of Arabian Sea have been made available to commercial shipping.

**ANNEX A TO NATIONAL REPORT-PAKISTAN**

<b>IHO S-55:</b>	<b>PAKISTAN</b>		<b>UPDATED</b>	<b>15 MARCH 2011</b>	<b>INT Region</b>	<b>I</b>
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**Status of Hydrographic Surveys**

A1	A2	B1	B2	C1	C2	A1/A2 = % adequately surveyed 0-200m / .200m		
90	30	10	70 <sup>1</sup>	0	70 <sup>1</sup>	B1/B2 = % requiring re-survey at larger scale or to modern standards 0-200m / .200m		
						C1/C2 = % which has never been systematically surveyed 0-200m / .200m		
<b>Comments:</b>								
1. Data for 70 % area with depths > 200 m is based on miscellaneous lines of soundings. This needs to be systematically surveyed on modern standards, which is being undertaken gradually.								

**Status of Nautical Charting**

A = % covered by INT Charts B = % covered by RNC C= % covered by ENC

Offshore passage/Small				Landfall Coastal passage / Medium				Approaches Ports/Large				
A	B	C		A	B	C		A	B	C		
100	0	66		100	0	25		100	0	100		
<b>Comments:</b>												
1. Small scale ENC cells of INT-751 and INT 7019, adequately covering shipping route through Arabian Sea, are available to mariners.												
2. Coastal charts that can facilitate mariners and fall within the major shipping routes have been converted to ENCs. Adjacent cells to these ENC cells are also under production and will be available to mariners shortly.												

**Status of Maritime Safety Information**

Local Warning	Coastal Warning	Port Information	NAVAREA Warning
No	Yes	Yes	Yes

Master Plan	Area A1	Area A2	Area A3	Area A4	NAVTEX	SafetyNET
	YES	YES	YES	YES	YES	YES
<b>Comment:</b> 1. All local information necessary for safety of navigation are promulgated through coastal warning.						