PAKISTAN

NATIONAL REPORT

13th MEETING

NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION

(NIOHC)

YANGON, MYANMAR

19-23 FEBRUARY 2013

BY
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. The department is primarily responsible for conducting hydrographic surveys of coastal and offshore waters of Pakistan, 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 published a series of International / National charts for the entire coast of Pakistan. PNHD comprises Cartographic Division, Chart Depot, ENC Division, HQ NAVAREA-IX, Survey Vessel and Hydrographic School. Pakistan is shouldering responsibility of NAVAREA-IX coordinator on behalf of Govt of Pakistan for promulgation of Maritime Safety Information since 1976.

HYDROGRAPHIC SURVEYS

2. Pakistan's coast is approximately 990 Kms long and by virtue of its unique characteristics, is divided into 02 parts; Makran coast & creek area. The later lies from east of Karachi till Sir Creek and is mainly comprised of deltaic region due to out fall of Indus River. Whereas, Makran Coast lies West of Karachi till Gwatar 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 Survey** 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, Current Meters and Automatic Tide Gauges etc are part of the ship's equipment inventory.

NEW CHARTS AND UPDATES

4. **ENCs** ENC Division was established in 2005 and since then good progress 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 PN Hydrographic Department on weekly and annual 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 printed version of said documents, up-to-date information on navigational warnings and NTMs are also available on website www.paknavy.gov.pk/hydro). Moreover, issuance of a List of Lights of national waters is planned in future.

MARITIME SAFTEY INFORMATION

8. Pakistan being NAVAREA-IX Coordinator is responsible for transmission of MSIs. Under GMDSS, following two types of MSI are issued:

a. NAVAREA IX warnings through International Safety Net.

b. Coastal warnings through NAVTEX.

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 made as and when required. Numerical list of all enforced NAVAREA IX warnings is broadcasted each Saturday. 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 commencing UTC 0230, 0630, 1030, 1430, 1830 and 2230. 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 integrity of MSIs being received by mariners, Coordinator NAVAREA IX monitors its broadcast through INMARSAT C terminal. Similarly, NAVTEX broadcast is also monitored.

12. **Delayed Reception Of Navigational Information** Navigational hazards are communicated by relevant state through fax, email and telephone, for further issuance of Navigational warnings by NAVAREA-IX HQ. The most effective mean has been through email. However, at time such communication is made through fax and post, which 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 limits of national jurisdictions. Based on this assessment, S-55 publication titled 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 (6 months).

d. Assistance in ENC production line procedures and quality management system.

e. Handling of MSIs

f. Cat B Hydrographic Course

16. PN Hydrographic School has contributed to train survey officers and technician of regional countries. Following courses were conducted in the last 5 years:

Country	**No. of Candidates**	**Year**	**Course Name**
Nigeria	01	2008	Basic Cartographic Officers Course
Azerbaijan	01	2009	Basic Hydrography Officers Course
Sir Lanka	01	2009	Basic Hydrography Course
UAE	01	2009	Basic Hydrography Course
Sir 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
Azebaijan	01	2011	Basic Hydrography Officers Course
Sir 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 by PNHD in collaboration with Pakistan National Institute of Oceanography (NIO).

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 services of SV BEHR PAIMA to NIO on request basis 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 have been installed. 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 had successfully accomplishing a pilot project of 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 source including automatic weather station installed at the coast is acquired to maintain met data bank of Pakistan coast and North Arabian Sea. Moreover, close liaison is maintained with a permanent automatic weather station to monitor the weather

changes. The data is Pakistan Met Department, for issues of met forecasts for Met AREA-IX.

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 effectively.

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.

IHO S-55:	PAKISTAN		UPDATED	15 MARCH 2011	INT Region	I

Status of Hydrographic Surveys

A1	A2	B1	B2	C1	C2			
90	30	10	70[1]	0	70[1]	A1/A2 = % adequately surveyed 0-200m / .200m		
						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		

Comments:

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		

Comments:

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

Comment:

1. All local information necessary for safety of navigation are promulgated through coastal warning.