



PAKISTAN

NATIONAL REPORT

3rd ROPME Sea Area Hydrographic Commission (RSAHC)
Meeting 8 and 9 June 2009

Monaco

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 Organisation, the department is primarily responsible for conducting hydrographic surveys of coastal and offshore waters of Pakistan and publishing nautical charts and relevant publications to fulfil 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 of 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 of deltaic regions because of out fall creeks of Indus river. Whereas, Makran coast lies from west of Karachi to Gawatar Bay, comprised of sandy shores & cliffs of sedimentary rocks.

3. Hydrographic Department being national hydrographic Organisation is responsible for undertaking hydrographic survey activities in Pakistani waters. SV BEHR PAIMA (hydrographic cum oceanographic survey vessel) has carried out surveys of entire coast of Pakistan as well as deep water. The department has taken up the survey work in a systematic way in order to meet both, national and international requirements / obligations. Continuous efforts have been made to adequately survey the critical areas for safe navigation within Pakistani waters. The department is presently involved in fresh surveys of critical 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 for 0 – 200 m depth areas continued to improve the coverage in A1 category area. Survey data of deep sea areas that falls under A2 category is relatively old. Work to complete deep sea (> 200m) area using new survey equipments and techniques is progressing at a moderate pace due to commitment of survey assets in high priority areas. However, a considerable portion of deep sea area has been recently surveyed in 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 DGPS, SV Probe,

CTD, Current Meters and Automatic Tide Gauges etc equipment is part of the ship's inventory.

NEW CHARTS AND UPDATES

4. 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. ENC 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 and INT 7019, adequately covering shipping route through Arabian Sea, are available to mariners.
 - c. 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. During this time, coastal area coverage is available through paper charts for use/reference.
 - d. ENC Distribution Method. Pakistan being member of IC-ENC. Is utilizing its services for data validation and distribution of ENCs.
 - 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 30 in number charts of different scales covering entire coast and off shore waters of Pakistan. These are kept up to date. Out of these, 6 charts presently form part of INT area "I". New edition of following national series charts have been printed and same are being considered for inclusion in INT series charts.

S.No.	PAK Chart	Description	INT No.
1.	PAK 33	Jiwani to Sir Creek	7020
2.	PAK 40	Gwadar Deep Water Port	7317
3.	PAK 45	Approaches to Gwadar	7313

Pakistan doesn't produce other charts e.g for pleasure craft, as their demand is almost nil.

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). 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.
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.

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 email. 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 continuously 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 the quality of bathymetric data and cartography as per recognised international standards, Pakistan Navy Hydrographic Department gives a lot of emphasis on the training of both surveying officers and survey recorders. Officers undergo Cat B course from Japan/Italy 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 with-in the country.

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

16. A case for IHO accreditation (Cat B) of Basic Hydrography course has recently been approved by the International Advisory Board (IAB) in their last meeting held from 20-24 April 2009.

17. PNHD is interested to train its men in the following areas:

- a. Short training in surveying with Multi Beam Echo Sounder.
- b. Hydrography / cartography data handling and archiving.
- c. Participation in bilateral or regional CBC development projects, for training of own personnel and to share expertise with regional countries.

OCEANOGRAPHIC ACTIVITIES

18. **General.** Oceanographic activities in Pakistan are carried out in collaboration with National Institute of Oceanography (NIO). Oceanographic cruises are arranged in which scientists from both the organisations 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 her ship SV BEHR

PAIMA for oceanographic cruises. Recently 02 oceanographic cruises in coastal and offshore waters have been coordinated for National Institute of Oceanography (NIO) in Dec 08 and Feb 09.

19. **Tide Gauge Network.** Pakistan is working on the installation of national network of automatic tide gauges along the coast which will be completed in about 3 years time frame. At present, two tide gauges i.e at Karachi and Gwadar are working and data is being transmitted. The data received from tide gauge network will be used for sea level measurements, tidal analysis for subsequent tide prediction and tsunami early warning. At least 02 more gauges will be on line within next 01 year.

20. **Acquisition of New Ship.** In view of the increasing requirement of oceanography and marine sciences, efforts are at final stage to acquire a dedicated oceanographic vessel for coastal surveys. Availability of this vessel will provide NIO a platform to do independent and dedicated oceanographic observations in near shore areas.

OTHER ACTIVITIES

21. **Participation in IHO Working Groups.** Pakistan actively participates in IHO working groups. Commodore Muhammad Zafaryab, the Ex Hydrographer of Pakistan Navy remained a member of IHO working group on the Manual of Hydrography. He prepared Chapter No 1 of M-13 IHO Manual on Hydrography. Moreover, Cdr Muhammad Bashir PN is member of Advisory Board on Law of The Sea (ABLOS) and GEBCO Sub Committee on Underwater Features Name (SCUFN). Lt Cdr of PNHD represents the Working Group on S-53 (Limits and Ocean of Seas).

22. **Participation in Hydrographic Activities.** During 7th NIOHC meeting, Pakistan accepted the leading role of a joint regional mobile survey team to initiate a pilot project for capacity building in the region. Under the said project, a joint team lead by Cdr Fiaz Hussain Pak Navy and comprising of surveyors from US, Seychelles and Bangladesh conducted IHO sponsored hydrographic survey around Bird Island and Denis Island in Seychelles Waters from 19 Jan to 03 Feb 09. The survey sheet and result of surveys were presented in the NIOHC meeting held in Seychells.

23. **Meteorological data Collection.** Meteorological data from Pakistan navy ships at sea and from major coastal stations is acquired to maintain met data bank of Pakistan coast and North Arabian Sea. Moreover, the deptt has installed a permanent automatic weather station to monitor the weather changes. The data is shared with Met Department, which issues met forecasts for Met AREA-IX.

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 level maritime activities / forums. PNHD has completed the surveys of entire coast of Pakistan and has published charts giving complete coverage. At present, resurveys of critical areas and new surveys including deep sea surveys are being conducted. The department actively participates in all IHO and regional hydrographic activities. As a coordinator of Navarea IX, responsibility for promulgation of navigational warnings is being effectively fulfilled. PN ENC division has been setup and ENC cells concerning three major ports and small scale ENCs adequately covering shipping route of Arabian Sea are available to commercial shipping.

ANNEX A TO NATIONAL REPORT-PAKISTAN

IHO S-55:		PAKISTAN				UPDATED	19 September 2007	INT Region	1
Status of Hydrographic Surveys									
A1	A2	B1	B12	C1	C2	A1/A2 = % adequately surveyed 0-200m / .200m			
90	30	10	70 ¹	0	70 ¹	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
Comments:						
All local information necessary for safety of navigation are promulgated through coastal warning.						