



**PAKISTAN**

**NATIONAL REPORT**

19<sup>th</sup> MEETING

**NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION (NIOHC)**

**MUSQAT - OMAN**

**25 - 28 MARCH 2019**

**BY**

**PAKISTAN NAVY HYDROGRAPHIC DEPARTMENT**

## **HYDROGRAPHIC DEPARTMENT OF PAKISTAN**

1. Pakistan Navy Hydrographic Department (PNHD) was established in 1949 and Pakistan 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 Navigation & Hydrography 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 1001 Kms long and by virtue of its unique characteristics, is divided into 02 categories; Makran coast & Indus Delta (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. 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 areas of interest. 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 92% 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 surveyed offshore Indus delta. The same is being 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 inventory.

c. **New Ship** In view of the increasing requirements, Pakistan is in the procurement process of new survey vessel which will be delivered in August 2019 and would enhance hydrography, oceanography and marine sciences capabilities. The ship is equipped with state of the art hydrographic and

oceanographic equipment e.g MBES, Sub bottom profiler, Synthetic Aperture Sonar and ADCP e.t.c. PNHD has plans to utilize this ship for shallow and deep sea surveys including capacity building of regional countries.

d. **Problems Encountered** No problems were encountered w.r.t conduct of hydrographic surveys.

### **NEW CHARTS AND UPDATES**

3. **ENCs** ENC Division was established in 2005 and since then it is progressing ENC production. Detail of the same is given below:

a. ENCs of all major ports and approaches i.e. Karachi, 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, have been produced. However, there is an issue pertaining to overlapping between ENCs of INT 751 and corresponding Indian national cell.

c. New ENCs of Karachi Deep Water Port (large scale) and off Cape Monze (approach Nav band) are in plan for completion by Dec 2019.

d. PN Hydrographic Department is more emphasizing on production of INT charts and indus delta creek area ENCs.

e. At present, Caris (GIS, S-57 Composer and paper composer) is being used for production and updation and charts. Moreover, second line of production i.e SevenCs will be available by end of 2019.

f. **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.

g. **RNCs** PNHD is neither producing nor has plans to produce RNCs.

h. **INT / National Paper Charts** PNHD have 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" of S-11.

j. **Other Charts** PNHD is not producing any other type of charts e.g pleasure crafts charts etc.

- k. **Problems Encountered** No problems were encountered w.r.t production of Charts/ ENC's.

## **NEW PUBLICATIONS & UPDATES**

4. **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.

## **MARITIME SAFETY INFORMATION**

5. 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.
- c. **NAVAREA IX Warnings** NAVAREA IX broadcast is passed daily at 0300 and 1500 UTC through INMARSAT using LES Burum. 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.
- d. **Coastal Warnings.** Coastal warnings are broadcasted as and when required. Weather messages are transmitted at 0800 and 1800 UTC daily. NAVTEX setup is being upgraded and warnings are issued using alternate available options.
- e. **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.
- f. **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.

### **(C-55)**

6. Status of C-55 is as under:

<b>Depth</b>	<b>A</b>	<b>B</b>	<b>C</b>
<200m	92	8	0
>200m	35	65	0

A= Percentage which is adequately surveyed

B= Percentage which requires re-survey at larger scale or to modern standards

C= Percentage which has never been systematically surveyed

### **CAPACITY BUILDING**

7. 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 Australia/USA 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. In 2018, officers of PNHD have undergone Cat B hydrography from Australia and Cat B Cartography from UK. Whereas, 01 officer is presently undergoing Cat A Hydrography course from UK. In addition, 01 officer from Azerbaijan alongwith 04 Pakistani officers have undergone Cat B Hydrography from Pakistan. Pakistan Navy Hydrographic Department can offer assistance to regional countries in following areas:

- a. Hydrographic surveys.
- b. Basic Survey Recorder / Technician Course (6 months).
- c. Assistance in ENC production line procedures and quality management system.
- d. Handling of MSIs.
- e. Cat B Hydrographic Course.

### **OCEANOGRAPHIC ACTIVITIES**

8. **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.

a. **Tide Gauge Network** Four in number automated tide gauges i.e. at Karachi, Ormara, Gwadar and Keti Bandar have been installed with the assistance of IOC. The tidal data besides supporting Tsunami warning analysis, is also being used for sea level measurements and tidal analysis for subsequent tide predictions.

b. **Equipment under procurement** The new survey vessel is equipped with Wave meter, ADCP and Rosette Water Sampler. Induction of this equipment would further enhance oceanographic capability of PNHD.

## **OTHER ACTIVITIES**

9. PNHD actively participates in following hydrographic related activities:

a. Participation in IHO Working Groups e.g Working Group on Special Publication (S-23) and Chart Standardization and paper chart working group (CSPCWG).

b. Conduct of Inland water surveys where sections of river Indus have been surveyed so far.

c. Support various maritime and research activities in our waters.

d. Maintenance of National Hydrographic Data Bank (NHDB).

## **CONCLUSION**

10. 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.

**Input to IHO publication P-5 (Yearbook)**

Annex A

No Change

**Input to IHO publication C-55**

Annex B

No Change