

NATIONAL REPORT TO REGIONAL HYDROGRAPHIC COMMISSION

REPUBLIC OF INDIA

1. Hydrographic Office / Service

1.1 The Indian Naval Hydrographic Department (INHD), with the National Hydrographic Office located at Dehradun, is the sole national authority for publication of nautical charts and publications for navigation at sea. As part of its international responsibilities the Department provides coverage for marine safety information in the region comprising of Indian Ocean, Arabian Sea and Bay of Bengal. With a fleet of eight modern oceangoing survey ships fully equipped with latest hydrographic and oceanographic sensors, and six more ships in the offing, it is a reckonable hydrographic organisation in the world.

1.2 The INHD is involved in systematic and standardised collection of geo-referenced data pertaining to coastal configuration, bathymetry, seabed composition, tides, currents, aids to navigation etc. The data collected by the fleet of survey ships, is subjected to a highly controlled processing for creation of databases to be used in production of navigational charts, definition of maritime boundaries and scientific studies on seas and coastal zone. Since the past few years, the department has also been producing digital charts in the form of Electronic Navigation Charts (ENC) in accordance with specifications of International Hydrographic Organisation, for use in the Electronic Navigation Chart Display and Information System (ECDIS). ENC/ECDIS is a cutting edge product of information technology applied to maritime navigation and is an intelligent and dynamic navigational information system designed to increase the safety and efficiency of navigation at sea. India is one of the few countries in the world producing these electronic charts. The National Hydrographic Office is also involved in the task of disseminating vital marine safety information round the clock through Global Maritime Distress and Safety Services using International Maritime Satellites.

1.3 On the international front India is an active member of the International Hydrographic Organisation, Monaco, and has representation on its various committees. In 2005 a Memorandum of Understanding on hydrographic cooperation was signed with Mauritius and hydrographic surveys of their waters have been undertaken. In addition surveys of ports and harbours of Seychelles and Maldives have also been undertaken. In tune with India's desire to foster good relations with its maritime neighbours, regular foreign surveys are being undertaken in over 7 littoral states of the Indian Ocean region, specially after the devastation caused by the tsunami of Dec 04.

1.4 The National Hydrographic School, Goa, an integral part of the INHD has the national responsibility for conduct of hydrographic training within India and functions under the overall professional supervision of the Chief Hydrographer to the Govt. of India. The School conducts courses for hydrographic officers, technicians, civilians as well as personnel from the Indian Ocean littoral states and has been classified as the Regional Hydrographic Training Centre for Africa, Persian Gulf and South East Asian region. The courses conducted by the School are recognised by the International Hydrographic Organisation, responsible for regulating and standardising hydrographic training world wide.

2. Surveys.

2.1 Coverage of New Surveys. The Indian Naval Hydrographic Department (INHD) functions under the aegis of the Indian Navy. The department has undertaken Hydrographic Surveys both at National and International level. In addition to the naval tasks the department carries out surveys for the private sector also. Some of the major surveys carried out in the recent past have been amongst others towards the updation of the charts for the Andaman and Nicobar Is and the Gulf of Kachch. In addition the department also undertook surveys off Seychelles, Maldives and Mauritius on bilateral co-operation.

2.2 New Technologies and / or Equipment. The Indian National Hydrographic Office has a varied genre of hydrographic equipment and software. The new technology equipment and softwares used in this department are GPS1230, Digital Side Scan Sonars 4200 FS, Atlas Deso-30 and Multibeam echo sounders, Current Meters/2DACM, Automated Tide Gauges, Automated Data Logging Systems (ADLS), Sound Velocity Profilers, Motion Sensors & Heave Compensators, Magnetometers, Gravimeters, ENC Production software CARIS HOM, SAMI, GIS Professionals, d'Kart Inspector ENC validation software, Tide Calculation/Prediction software, Photogrammetry software, Image Processing software – ERDAS Imaging software, CARIS LOTS software and Bathymetric data processing software- CARIS HIPS/SIPS. Acoustic Doppler Current Profilers (ADCPs), Current Temperature and Depth (CTD) sensors, Long Range, Medium range & Short range Differential Global Positioning System (DGPS), Leica Geo Office (LGO) software.

2.3 New Ships. At present this department has 08 modern survey ships. Six more ships of catamaran hull are under construction and induction is likely to commence by mid 2009 in a phased manner.

2.4 Problems encountered Nil

3. New Charts & Updates.

3.1 ENCs. India has produced 241 ENC Cells of its National Waters. Of all these ENC released, the break up as per usage band index is as follows :-

CATEGORY	USAGE BAND	NO OF ENCs
Overview	1	6
General	2	7
Coastal	3	55
Approach	4	44
Harbour	5	106
Berthing	6	23
	Total	241

INHO is applying stringent QA/QC on all its ENCs before releasing them to market. Besides this regular ENC Database is being prepared and ENC updates are being generated and supplied every fortnight. Updates are also being checked for QA/QC against Standard

Validation tools. India has set its priorities for production of ENC's covering its national waters and jurisdiction.

3.2 **ENC Distribution Method.** Indian ENC's are presently being distributed via its appointed VARs viz M/s Jeppesen Marine and UKHO. At present Jeppesen Marine is distributing ENC's in CM-93//3 and S-63 IMO formats. UKHO is distributing ENC's in S-63 format.

3.3 **INT Charts.** India, as the coordinator of International charting group for the North Indian Ocean (Area J) has responsibility to produce 54 INT charts on medium and large scale. Out of 54 INT charts, India has produced 47 INT charts and remaining are planned to produced subsequently.

3.4 **National Paper Charts.** Indian National Hydrographic Office is responsible for production of Nautical Charts and publications. At present India has produced 325 Nautical charts of Indian Ocean as on 16 Feb 2009.

3.5 **Identification of Producer Nation.** India is the producer nation of small scale INT Charts, ENC's viz IN17705a & IN17706b for which its ENC production has already been done. As regards producer nation, India is the producer nation of all ENC's covering its National Waters.

4. **New Publications & Updates.**

4.1 **New Publications.** The following Books/Publications were published during the last year:-

4.1.1	Notices to Mariners - Special Edition	-	2008
4.1.2	Nautical Almanac	-	2009
4.1.3	Tidal Predictions 2009 Indian and selected Foreign Ports (for Defence)	-	2009

4.2 **Updated Publications.** NIL

4.3 **Means of Delivery e.g. Paper, Digital.** Paper/Digital

4.4 **Problems encountered.** Nil

5. **MSI**

5.1 **Existing Infrastructure for Transmission.** All Radio Navigational Warnings for NAVAREA-VIII are issued by the Chief Hydrographer to the Government of India. The Naval Chart Depot, Mumbai, coordinates the broadcasting of all Navigational Warnings. Reports/Information are directly sent to Naval Chart Depot by various authorities with a copy of information to National Hydrographic Office, Dehradun. This office closely monitors all broadcasts. Apart from this, informations received directly in the office are also communicated to Naval Chart Depot for transmission. The Navigational Warnings

(NAVAREAS) are forwarded to the Earth Station, for transmission through INMARSAT 'C' terminals, which are mandatory in accordance with GMDSS guidelines for all ships. Furthermore, all the updated warnings including the Notices to Mariners are available on the INHO website www.hydrobharat.nic.in.

5.2 **Problems Encountered.** Nil.

6. **S-55 (Updated Table).** The updated S-55 table is placed at Annexure 'A' to this National Report.

7. **Capacity Building**

7.1 **Indo-Mauritian Hydrographic Cooperation.** India has signed a MoU on hydrographic cooperation with Mauritius in Oct 05. The MoU envisages India to carry out survey of Mauritian waters, training of personnel and setting up of Hydrographic Infrastructure at Mauritius. India has completed 6 Navigational surveys in Mauritian waters. Two more surveys are presently being undertaken. India is also assisting the Mauritian authorities to make a road map for creating the infrastructure of the Mauritian hydrographic department. India has also assisted Mauritius in the oceanographic data collection for the path breaking Mauritian Land based Ocean Industry project.

7.2 **Indo-Maldives.** India has undertaken two joint surveys off Maldives in 2006 and 2007. The charts utilising the said data of 2006 have been handed over to the Maldivian authorities.

7.3 **Indo Seychelles.** Joint surveys have been undertaken with the Seychellois authorities in 2003, 2006 and 2008.

8. **Oceanographic Activities.** The Indian Naval Survey Ships are equipped with oceanographic equipment and are capable of collecting geophysical and oceanographic data.

IHO SPECIAL PUBLICATION S-55
“STATUS OF HYDROGRAPHIC SURVEYING AND NAUTICAL CHARTING WORLD-WIDE”
QUESTIONNAIRE

Country : **India**

Date of validity of Information : **16 Feb 2009**

Are any amendments required to your entry in the IHO Year Book? If so, enter below.
 Update is particularly important on your outsourcing strategy and on your ability to provide contract survey or charting support to other states in your RHC area.

INDIA (REPUBLIC OF)

NATIONAL HYDROGRAPHIC OFFICE Post Box No. 75 107 - A Rajpur Road DEHRA DUN – 248 001 (UTTARAKHAND)	
Department of which the Hydrographic Office is part <i>– Ministère don't dépend le Service Hydrographique –</i> <i>Ministerio del que depende el Servicio Hidrográfico</i>	Indian Navy, Ministry of Defence.
Principal functions of the H.O. – Attributions <i>principales du S.H. – Principales funciones del S.H.</i>	Hydrographic surveys, Project surveys, Nautical charts, Electronic Navigational Charts (ENC), Notices to Mariners (Fortnightly), Radio Navigational Warnings, Light Lists, Sailing directions, Nautical Almanac, Tides, Tidal streams and currents, Oceanographic data analysis and publications, Marine and earth sciences, Coastal Zone Regulation Plan Charts, UNCLOS Charts, Fisheries Charts, Procurement & Maintenance of Hydrographic Oceanographic and Cartographic equipment for the department, Consultancy and Hydrographic Training for International Hydrographic Cooperation.
National day day – Fête nationale - Fiesta nacional	Independence Day 15 August Republic Day 26 January
Telephone :	+ 91 (135) 2747 365
Fax :	+ 91 (135) 2748 373
E-mail :	incho@dataone.in
WEB site:	http://www.hydrobharat.nic.in
Date of establishment and Relevant National Legislation – Date de fondation et législation nationale concernée– Fecha de establecimiento y Leyes nacionales de referencia	1776 Govt. of India. Rules of Business; The Territorial Waters. Continental Shelf. EEZ & Maritime Zones Act 1976.
Name and rank of the Director or Head– Nom et grade du directeur – Apellidos y graduación del Director	Rear Admiral B.R. RAO, AVSM, NM, VSM, FIS, IN Chief Hydrographer to the Government of India
Tonnage– Tonelaje	2008 = 14520324
Total Budget–Budget total – Presupuesto Total	Rs. 1000 millions approx (Annual Revenue Budget) including survey ship operations

Staff employed - Effectifs - Plantilla	<p>Commodore SS Karnik, NM Joint Chief Hydrographer</p> <p>Commodore P Jayapal, VSM Principal Director (Chart Branch)</p> <p>Captain R Nautiyal Director (International Affairs)</p> <p>Commander TP Mahato Joint Director of Hydrography (Operations)</p> <p>Commander A Muralidhar Joint Director of Hydrography (Chart Sales & Distribution)</p> <p>Commander A Banerjee Joint Director of Hydrography (Maritime Safety Services)</p> <p>Commander NSS Sreenivas Joint Director of Hydrography (Data Management)</p>																											
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Type of publications produced (e.g; Tide Tables, Sailing Directions, List of Lights etc.) -Type de publications produites (par ex: Tables des marées, Instructions nautiques, Livres des Feux, etc. -Tipo de publicaciones producidas (por ej: Tablas de mareas, Derroteros, Libros de Faros etc)	<ol style="list-style-type: none"> 1. List of Lights 2. Sailing Directions 3. Nautical Almanac 4. Symbols and Abbreviations 5. Notices to Mariners 6. Oceanographic data 7. Supplement to Indian Tide Tables 8. Catalogue of Charts 																											
Surveying vessels/ Aircraft – Bâtiments hydrographiques/aéronefs - Buques hidro-gráficos/ Aeronaves SANDHAYAK NIRDESHAK NIRUPAK INVESTIGATOR JAMUNA SUTLEJ DARSHAK SARVEKSHAK	<table border="0"> <thead> <tr> <th>Displacement</th> <th>Date Launched</th> <th>Crew</th> </tr> </thead> <tbody> <tr> <td>1820</td> <td>1981</td> <td>200</td> </tr> <tr> <td>1820</td> <td>1983</td> <td>200</td> </tr> <tr> <td>1820</td> <td>1985</td> <td>200</td> </tr> <tr> <td>1820</td> <td>1990</td> <td>200</td> </tr> <tr> <td>1820</td> <td>1991</td> <td>200</td> </tr> <tr> <td>1820</td> <td>1993</td> <td>200</td> </tr> <tr> <td>1820</td> <td>2001</td> <td>200</td> </tr> <tr> <td>1820</td> <td>2002</td> <td>200</td> </tr> </tbody> </table>	Displacement	Date Launched	Crew	1820	1981	200	1820	1983	200	1820	1985	200	1820	1990	200	1820	1991	200	1820	1993	200	1820	2001	200	1820	2002	200
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<p>Outsourcing strategy -<i>Stratégie en matière de travail exécuté sous contrat à l'extérieur -estrategia de contratación de trabajos.</i></p>	<p>1. Nil on Survey</p> <p>2. Production of ENC (as required basis) with QA/QC at the office.</p>
<p>Other information of interest -<i>Autres informations utiles - Otra información de interés.</i></p>	<p>1. National Hydrographic School is an ISO 9001/2000 Certified Institute for Hydrographic Training. The Long Hydrographic Course and Basic “H” Course conducted by National Hydrographic School have been awarded CAT “A”, CAT “B” Accreditation by FIG/IHO Advisory Board on Standards of Competence for Hydrographic Surveyors. In April 2006 the accreditation has been renewed for further six years.</p> <p>2. 100 % of National Water ENCs have been released to market. Regular updates of ENCs promulgated fortnightly.</p> <p>3. Out of 54 INT Charts to be produced by India, 47 have already been published and balance would be published in due course.</p> <p>4. The Hydrographic Department of India has the required resources, Infrastructure and technical expertise to assist littoral states in the following areas:</p> <p>(i) Conduct of Hydrographic, Oceanographic and Coastal Zone Regulation Plan Surveys.</p> <p>(ii) Training in Hydrography and Cartography.</p> <p>(iii) Setting up of hydrography infra-structure and Hydrographic Office.</p> <p>(iv) Exchange of personnel.</p> <p>(v) Production of Electronic Navigational Charts (ENCs).</p> <p>(vi) EEZ/Continental Shelf Surveys.</p>

Note:- Amendments are highlighted in yellow

1. HYDROGRAPHIC SURVEYING

1.1 **Status of Hydrographic survey of all Navigable Waters, including internal waters, out to the limits of the EEZ** : (Please refer to the guidance given in the introductory text "Analysis of the Status of Surveys".)

Survey Coverage, where :

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.

	A	B	C
Depths<200 m	100	0	0
Depths>200 m	88	12	0

Amplifying Information:

1. (a) The entire navigational area in depths less than 200 meters has been adequately surveyed. There are few small areas where the charted data is based on old surveys. These areas are well away from the shipping routes and are of no interest to the Mariners.

(b) There are some areas in Indian Waters like Gulf of Kachch & Khambat, Sandheads etc where the seabed is unstable. A cautionary note to this effect is printed on Navigational Charts.

2. Significant shortfalls in sea areas of high priority for maritime traffic:

a. Maritime Shipping Routes:

(1) International (i.e. between hub ports): **NIL**

(2) Regional (i.e. between hub ports and feeder ports): **NIL**

(3) Internal (i.e. from feeder ports to other national ports; cruise liner routes): **NIL**

b. Ports and approaches : **NIL**

c. Other (fisheries; offshore industry): **NA**

1.2 Status of Hydrographic survey of all Navigable Waters, including internal waters, out to the limits of the EEZ of dependent territories :

NA

1.3 Status of Hydrographic survey of all Navigable Waters, including internal waters, out to the limits of the EEZ of developing countries where surveys have been, or are going carried out by your hydrographic service:

NA

2. NAUTICAL CHARTING

2.1 Status of Nautical Charting within the limits of the EEZ

Coverage of charts published by your organisation, where:

A = percentage covered by INT series, or a paper chart series meeting the standards in M-4.

B = percentage covered by Raster Navigational Charts (RNCs) meeting the standards in S-61.

C = percentage covered by ENC's meeting the standards in S-57.

Purpose/Scale	A	B	C
Offshore passage/small	100	0	60
Landfall and Coastal passage/Medium	100	0	75
Approaches and Ports/Large	100	0	97
Percentage of Group A showing depths in meters	100		
Percentage of Group A referenced to a satellite datum	50		

Amplifying notes : Nil

Significant gaps in coverage : Nil

2.2 Status of Nautical Charting within the limits of the EEZ of dependent territories

NA

2.3 Status of Nautical Charting produced by mutual agreement within the limits of the EEZ of other coastal states

NA

3. MARITIME SAFETY INFORMATION (MSI)

NAVIGATIONAL INFORMATION (S-53)

Service	Yes	No	Partial	Notes
Local Warnings	√			
Coastal Warnings	√			
Navarea Warnings	√			
Information of Ports and Harbours	√			Agreements in place with all port authorities

GMDSS IMPLEMENTATION (IMO Publication 970 - GMDSS Handbook)

Service	Yes	No	Partial	Notes
Master Plan	√			
A1 Area	√			
A2 Area	√			
A3 Area	√			
NAVTEX	√			
Safety NET	√			

4. NATIONAL PRIORITIES FOR INTERNATIONAL AND OR REGIONAL CO-OPERATION OR ASSISTANCE

4.1 If international or regional projects are underway in your waters, please indicate here :

NA

4.2 Indicate below any priorities for co-operation or assistance:

a. Projects meriting IHO liaison with international funding agencies:

(1) Regional co-operative projects : **NA**

(2) National Projects : **MoU on hydrographic cooperation with Mauritius signed in Oct 05 for a period of 5 years.**

b. Requirements for training assistance: **NIL**

c. Requirements for assistance with procurement of equipment: **NIL**

5. GENERAL COMMENTS OR ADDITIONAL INFORMATION

NIL

Signature: **Captain R Nautiyal
Director (International Affairs)**

Date: **16 Feb 2009**