NATIONAL REPORT TO REGIONAL HYDROGRAPHIC COMMISSION
REPUBLIC OF INDIA- FEB 2012

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 NAVAREA VIII comprising of Indian Ocean, Arabian Sea and Bay of Bengal. With a fleet of eight modern ocean-going survey ships; fully equipped with latest hydrographic and oceanographic sensors and seven more ships including a training vessel in the offing, it is one of the most reckonable hydrographic organisations in the world.

1.2 The National Institute of Hydrography (NIH), 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 Institute conducts courses for hydrographic officers, technicians, civilians as well as personnel from the Indian Ocean littoral states. The courses conducted by the Institute are recognised by the International Hydrographic Organisation. The courses conducted and duration is depicted in the table below:-

Sl No	Course	CAT	Duration
(a)	Long H Course	A	58 Weeks
(b)	Basic H Course	B	29 Weeks
(c)	PO ‘Q’ SR	-	18 Weeks
(d)	Basic ‘Q’	-	29 Weeks
(e)	LS SR ‘Q’ Refresher	-	11 Weeks

2. Surveys

2.1 **Coverage of New Surveys**. The INHD has undertaken Hydrographic Surveys both in National and International waters. In the last two years 13 new major ports have been developed in the Indian waters in addition to 11 major ports that already exist. There are

numerous minor ports and fisheries harbours dotting the coast which is supported by the department as far as navigational surveys and maritime safety information is concerned. Hydrographic surveys are being undertaken towards the updation of existing charts of the Indian coast and Island territories. The department has conducted 12 new surveys in foreign waters during the last two years. In the year 2011-12 the department undertook International Hydrographic Co-operation survey of Aldabra Island, Seychelles, CLCS survey off Maldives, demonstration survey off Kenya and a ship is scheduled to be deployed to South Africa, Mozambique and Mauritius in Feb / Mar 2012 to undertake surveys.

2.2 **New Technologies and/or Equipment**. The Indian Naval Hydrographic Department (INHD) is at the forefront in the induction and utilisation of modern and high-end surveying equipment/ technologies.

Sl No	Equipment	Quantity
1	**Single Beam Echosounder**	**86**
(a)	Shallow	49
(b)	Medium	18
(c)	Deep	7
2	**Multi Beam Echosounder**	**12**
(a)	Shallow	8
(b)	Deep	4
3	**Side Scan Sonars**	**29**

2.2.1 **ROV/AUV**: Six ROVs and Six AUVs are in the process of being inducted into the new catamaran hull survey vessels first of which is likely to be commissioned in April 12.

2.2.2 **Processing System/ Softwares**.

(a) Bathymetric data collection and post processing.

(b) Geodetic data post processing software.

(c) ENC production software.

(d) ENC validation software.

(e) Digital Side Scan Sonar data post processing software.

(f) Image processing software.

(g) The department has commissioned state of the art automated cartographic system for production of paper nautical charts and ENCs.

(h) To improve the efficacy of chart production the department is in the process of acquiring a state of the art computer to plate system.

2.2.3 **Miscellaneous Equipment**.

(a) Current Meters and Acoustic Doppler Current Profilers.

(b) Conductivity Depth Temperature equipment and Sound Velocity Profilers.

(c) Motion Sensors.

(d) Sea Gravimeters, Magnetometers and Automated Tide Gauges.

2.3 **New Ships**. In addition to the existing survey fleet of eight large survey ships, the construction of six Catamaran Hull type small survey vessels is underway with likely induction starting by Mar 2012. In addition one survey training vessel is being planned for induction in 2014.

2.4 **Problems encountered**. Nil

3. New Charts & Updates

3.1 **ENCs**. As on 31 Dec 11 India has produced 248 ENC Cells of the National Waters and two foreign ENCs (Mathurin Harbour and Cargados Carajos Shoals of Mauritius). Of all these ENCs released, the break up as per usage band index is as follows:-

CATEGORY	USAGE BAND	No OF ENCs
Overview	1	6
General	2	14
Coastal	3	49
Approach	4	47

Harbour	5	99
Berthing	6	33
Total		**248**

All the ENCs produced by INHO are subjected to stringent QA/QC before release. ENC updates are also generated and supplied every fortnight to the users.

3.2 **ENC Distribution Method**. Indian ENCs are distributed worldwide by UKHO, M/s Jeppesen Marine and M/s PRIMAR. We provide ENCs in S-63 format to the Indian Navy and other national agencies.

3.3 **INT Charts**. India, as the coordinator of International charting group for the North Indian Ocean (Area J), has responsibility to produce 82 INT charts on medium and large scale. Out of 82 INT charts, India has produced **53 INT charts** and remaining are planned to be produced in due course of time.

3.4 **National Paper Charts**. Indian National Hydrographic Office (INHO) produces 337 Nautical Charts (including foreign water charts) and 16 publications of the Indian Ocean Region. These are being distributed through a network of 13 Indian and 07 foreign chart agents/ distributors.

4. New Publications & Updates

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

4.1.1 Notices to Mariners – Annual Edition 2012

4.1.2 Nautical Almanac 2012

4.1.3 Tidal Predictions 2012 Indian and selected Foreign Ports.

4.2 **Updated Publications**. The following Publications were updated during the last year:-

4.2.1 Symbols and Abbreviations used on chart

4.2.2 Catalogue for Indian charts, ENCs and publications

4.3 **Means of Delivery e.g. Paper, Digital**. The publications and updates are delivered both in paper and digital form through chart agents and VARs.

4.4 **Problems encountered**. Nil

5. **Marine Safety Information**

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 at Mumbai coordinates the broadcasting of all Navigational Warnings. Reports/ Information may be 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, information received directly in the office is also communicated to Naval Chart Depot for transmission. The Navigational Warnings (NAVAREAS) are forwarded to the Land Earth Station (LES) located at Pune, for transmission which is received through INMARSAT 'C' terminals. The schedule of transmission of Navigational and Met warnings through Safety Net is as follows:-

5.1.1 **Navigational Warnings**.

LES Pune - at 1000 and 2200 UTC

5.1.2 **Meteorological Warnings**.

(a) LES Pune - 0900 & 1800 UTC for area N of Equator

(b) Aussaguel- 0130 1330 UTC and at 0000 0600 1200 1800 UTC in case of cyclone warnings for area S of Equator

(c) Australia – Tropical cyclone warnings, if any are prepared and issued by Australia as unscheduled broadcasts for area South of Equator and East of 90^0 via Burum.

5.1.3 **NAVTEX Coverage**.

(a) Chennai - Operational (Transmitting with reduced power)

(b) Mumbai - Under repair/ replacement.

(c) Mauritius - Operational

5.2 Furthermore, all the updated warnings including the Notices to Mariners are available on the INHO website ***www.hydrobharat.nic.in*****.**

5.3 **New Infrastructure in accordance with GMDSS Master Plan**. Seven new NAVTEX stations are planned to be set up in the near future. Three stations on the West Coast of India, three on the East Coast of India and one in the Andaman and Nicobar Islands are planned as follows:-

5.3.1 Veraval (Gujarat)
5.3.2 Vengrula (Maharashtra)
5.3.3 Muttam Point (Tamil Nadu)
5.3.4 Porto Novo (Tamil Nadu)
5.3.5 Vakalpudi (Andhra Pradesh)
5.3.6 Balasore (Orissa)
5.3.7 Keating Point (Andaman and Nicobar Islands)

5.4 **Problems Encountered**. Nil.

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

7. **Capacity Building**

7.1 **One day workshop on Maritime Safety Information (MSI)**. A one day workshop on Maritime Safety Information (MSI) was conducted at National Hydrographic Office Dehradun on 27 Jul 11. The aim of the workshop was to address the issues regarding promulgation of NAVAREA VIII warnings with all Indian stakeholders in the maritime domain. Delegates from Indian Army, Navy, Air force, Coastguard and national agencies like, DRDO, ISRO, DG Hydrocarbons, NIO, NIOT, INSA etc. attended the workshop. The workshop provided a huge opportunity to receive valuable suggestions and inputs from various national agencies and discuss issues pertaining to safety of navigation. New guidelines regarding procedures for promulgation of NAVAREA VIII warnings were formulated and circulated to all agencies.

7.2 A two week course for training on chart digitisation was conducted for personnel from hydrographic survey wing of Kerala ports. A two week adhoc course related to various aspects of hydrography was conducted for personnel from various major and minor ports of

the country at NIH, Goa. Training on Navigational chart reading was conducted for personnel of Directorate of Light houses and Light Ships at NHO.

7.3 **International Co-operation Surveys**

7.3.1 **Indo-Maldives.** The Indian Naval Hydrographic Department's engagement with Maldives dates back to 2004 when a request seeking Indian assistance for setting up a hydrographic unit and undertaking surveys in Maldives was received from the Govt of Maldives. Since then India has undertaken four surveys for Maldives, which includes CLCS survey off Maldives. Two navigational charts of the areas namely; Male Atoll (Chart No. 2099) and North Male Atoll and Approaches (Chart No. 2501) have been published till date.

7.3.2 **Indo-Mauritius.** In the last six years, post signing of the MoU on hydrography, INHD has completed eighteen hydrographic surveys including a CLCS survey off Rodrigues Island and seven navigational charts have been published. These charts are Agalega Island (Chart 2084), Approaches to Port Louis, Port Louis (Chart 2086), Approaches to Cargados Carajos Shoals (Chart 2503), Mathurin Harbour (Chart 2504), Approaches to Mathurin Harbour (Chart 2505) and Grand Bay, Grande Rivier Noire Bay (Chart 2506) and Grand Port - Southern Entrance (2507). A survey ship is scheduled to be deployed to Mauritius in Mar / Apr 2012 for undertaking hydrographic survey. The 7th Indo-Mauritian Joint Committee meeting was held from 22- 24 Feb 12 at Port Louis, Mauritius for finalising the deployment details and various other capacity building issues..

7.3.3 **Indo-Sri Lanka.** In May - Jun 10, I.N. Ship Nirupak was deployed to undertake the hydrographic survey of Kankesanturai Harbour. The navigational chart of the harbour (Chart 3501) has been published (3501) in Feb 2011.

7.3.4 **Indo-Seychelles.** Post signing of the MoU on Indo-Seychelles Defence Cooperation, a total of seven hydrographic surveys have been completed. Four important charts namely Approaches to Praslin, Mahe, Port Victoria and Assumption Island have been published. In addition, personnel from Seychelles People's Defence Force Seychelles (SPDF) continue to be trained at NIH. So far 13

personnel from SPDF have completed training. Officers and Sailors from SPDF continue to embark Indian Naval survey ships for practical experience.

7.3.5 **Indo-Mozambique.** During the visit of technical delegation from India to Mozambique in February 2011, Mozambique authorities had indicated survey requirement for four major ports namely Maputo, Beira, Nacala and Pemba in order of priority. A survey ship is visiting Mozambique in Apr 12 to undertake a hydrographic survey off Beira.

7.3.6 **Indo-South Africa.** The delegation from Indian Naval Hydrographic Department led by RAdm SK Jha, Chief Hydrographer, is scheduled to visit South Africa in mid Mar 12 for detailed deliberations on various issues related to Indo-South African co-operation in the field of hydrography. A survey ship is also scheduled to visit Cape Town, South Africa coinciding with the visit of the delegation.

7.3.7 **Safety of Navigation and Environment Protection in Straits of Malacca and Singapore**.

7.3.7.1 To deal with issues pertaining to safety of navigation and environmental protection in the straits, six projects were identified by the littoral states, wherein they sought assistance from all stake holders. India committed itself to provide assistance in two projects (Project I and Project IV).

7.3.7.2 In Project I, India offered to conduct a free course on bathymetry with special emphasis on wreck investigation/monitoring and wreck removal for the three participants each from the littoral states. India has already conducted the four weeks tailor made course on the bathymetry survey and wreck related aspects for three personnel each from Indonesia & Malaysia and two persons from Singapore at the National Institute of Hydrography (NIH), Goa.

7.3.7.3 In Project IV, India committed funds to the tune of US $ 1.687 mn. to set up a network of six tide gauges, current meters and wind sensors each along with information delivery systems in the first year followed by running and maintenance of the project for next three years. India also assisted in carrying out feasibility study/site survey, drawing out technical specifications and finalising of tender documents in respect of the said Project. In this respect an

Indian delegation participated in the 4th Co-operative Forum meeting held at Malacca in Malaysia in Oct 11.

7.3.8 Since inception a total of 520 foreign nationals were trained at NIH, Goa. The number of foreign personnel trained in the year 2011-12 is appended below:

Sl No	Course	No of Foreign Trainees
(a)	Basic 'H'	06
(b)	Basic 'Q'	02
(c)	Long 'H'	06
(d)	PO 'Q' SR	01
(e)	Onboard Training	03
	Total	**18**

8. **Oceanographic Activities.** The Indian Naval Survey Ships are equipped with oceanographic equipment and are capable of collecting geophysical and oceanographic data. The data is collected while undertaking hydrographic surveys. In addition the department provides assistance to various governmental organizations for collection of the oceanographic data.

MISCELLANEOUS

9. **World Hydrographic Day celebrations**. The World Hydrographic Day was celebrated in India at NHO Dehradun, National Institute of Hydrography (NIH), Goa and onboard ships at Vishakapatnam, Kochi and Karwar. Keeping in view the theme "Human resources – The important element of the success of Hydrography" workshops, lectures, demonstrations and visits by undergraduate and senior school students were organised at these locations.

Annexure 'A'

IHO SPECIAL PUBLICATION C-55
"STATUS OF HYDROGRAPHIC SURVEYING AND NAUTICAL CHARTING WORLD-WIDE"
QUESTIONNAIRE

Country : **India**

Date of validity of Information : **24 Feb 2012**

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 *– Ministère don't dépend le Service Hydrographique – Ministerio del que depende el Servicio Hidrográfico*	Indian Navy, Ministry of Defence.
Principal functions of the H.O. – *Attributions principales du S.H. – Principales funciones del S.H.*	Hydrographic surveys, Project surveys, Nautical charts, Electronic Navigational Charts (ENC), Notices to Mariners (Fortnightly), Radio Navigational Warnings, List of Lights, 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, Hydrographic & Cartographic 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 :	Inho-navy@nic.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 SK Jha, NM Chief Hydrographer to the Government of India
Tonnage– Tonelaje	2011 = 11113181tons
Total Budget-*Budget total – Presupuesto Total*	Rs. 1000 millions approx (Annual Revenue Budget) including survey ship operations

Staff employed - *Effectifs -Plantilla*	Commodore TK Ashokan, NM Principal Director Commodore KM Nair, NM Principal Director Commodore Vinay Badhwar, NM Additional Principal Director (Chart Branch) Captain TP Mahato Director of Hydrography (Operations) Commander R Bargoti Joint Director of Hydrography (Coordination) Commander SK Nair Joint Director of Hydrography (Personnel & Training) Commander Deepak Sharma Joint Director of Hydrography (Chart Sales & Distribution) Commander HA Hardas Joint Director of Hydrography - I (Materials) Commander J Gurumani Joint Director of Hydrography (Hydrographic Data Management) Commander RB Menon Joint Director of Hydrography (International Affairs) Commander Anand Narayanan Joint Director of Hydrography (Maritime Safety Services) Commander Amit Pant Joint Director of Hydrography (Operations) Commander Mahendra Kumar Joint Director of Hydrography – II (Materials) Lieutenant Commander Senapati Staff Officer to the Chief Hydrographer Mr. SS Chauhan Asst Civilian Chief Hydrographic Officer Mr. Rajesh Kumar Asst Civilian Chief Hydrographic Officer
N° of charts published -*Nombres de cartes publiées - N° de cartas publicadas.*	337

N° of INT charts published -*Nombres de cartes INT publiées - N° de cartas INT publicadas.*	(a) Small scale		02
	(b) Medium & Large Scale		51
N° of ENC cells published -*Nombres de cellules ENC publiées - N° de células ENC publicadas.*	248		
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)*	1. West Coast of India Pilot. 2. Bay of Bengal Pilot. 3. List of Radio Signals (Vol – I) 4. List of Radio Signals (Vol – II) 5. List of Radio Signals (Vol – V) 6. List of Radio Signals (Vol – VI) 7. List of Light & Fog Signals (Vol D&E). 8. List of Light & Fog Signals (Vol F&K) 9. Notices to Mariners (Special Edition). 10. Notices to Mariners (Annual Edition). 11. Symbols and Abbreviations 12. Catalogue of Charts & Publications. 13. Nautical Almanac. 14. Tidal Predictions.		
Surveying vessels/ Aircraft – *Bâtiments hydrographiques/aéronefs - Buques hidro-gráficos/ Aeronaves*	Displacement	Date Launched	Crew
SANDHAYAK	1820	1981	200
NIRDESHAK	1820	1983	200
NIRUPAK	1820	1985	200
INVESTIGATOR	1820	1990	200
JAMUNA	1820	1991	200
SUTLEJ	1820	1993	200
DARSHAK	1820	2001	200
SARVEKSHAK	1820	2002	200
Outsourcing strategy -*Stratégie en matière de travail exécuté sous contrat à l'extérieur -estrategia de contratación de trabajos.*	1. Nil on Survey 2. Nil on ENC Production		

Other information of interest -*Autres informations utiles - Otra información de interés.*	1. National Institute of Hydrography is the Institute for Hydrographic Training. The Long Hydrographic Course and Basic "H" Course conducted by National Institute of Hydrography 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 a further period of six years. 2. ENCs of 100 % of National Water have been produced. Regular updates of ENCs are promulgated fortnightly. 3. In 2011 India proposed inclusion of 26 additional INT charts in the region. Therefore, out of 82 INT Charts to be produced by India, 53 have been published. 4. The Hydrographic Department of India has the required resources, Infrastructure and technical expertise to assist littoral states in the following areas: (i) Conduct of Hydrographic, Oceanographic and Coastal Zone Regulation Plan Surveys. (ii) Training in Hydrography and Cartography. (iii) Setting up of hydrographic infra-structure and Hydrographic Office. (iv) Exchange of personnel. (v) Production of Electronic Navigational Charts (ENCs). (vi) EEZ/Continental Shelf Surveys.

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:

(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.

1.2 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**

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

NA

1.4 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 being 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 ENCs meeting the standards in S-57.

Purpose/Scale	A	B	C
Offshore passage/small	100	0	100
Landfall and Coastal passage/Medium	100	0	100
Approaches and Ports/Large	100	0	100
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	√			

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:

(i) Regional co-operative projects : **India has provided technical expertise and contributed US $ 1.687 mn for setting up of wind, current and tide sensors in the Straits of Malacca and Singapore (Project IV) under the aegis of the Co-operative Mechanism on the Safety of Navigation and Environmental Protection in the Straits of Malacca and Singapore.**

(ii) National Projects : **MoU on hydrographic cooperation with Mauritius till Oct 2015.**

(b) Requirements for training assistance: **NIL**

(c) Requirements for assistance with procurement of equipment: **NIL**

5. GENERAL COMMENTS OR ADDITIONAL INFORMATION

World Hydrographic Day celebrations. The World Hydrographic Day was celebrated in India at NHO Dehradun, National Institute of hydrography (NIH), Goa and onboard ships at Vishakapatnam, Kochi and Karwar. Keeping in view the theme "Human resources – The important element of the success of Hydrography" workshops, lectures, demonstrations and visits by undergraduate and senior school students were organised at these locations.

Signature: **Commander RB Menon**
Joint Director of Hydrography
(International Affairs)

Date: **01 Mar 2012**