

NATIONAL HYDROGRAPHIC OFFICE
OF
NATIONAL AQUATIC RESOURCES RESEARCH & DEVELOPMENT AGENCY
SRI LANKA



NATIONAL REPORT
TO THE
16TH NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION
CHITTAGONG, BANGLADESH
14-16 MARCH 2016

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1. HYDROGRAPHIC OFFICE/ SERVICE

National Hydrographic Office (NHO) of National Aquatic Resource Research and Development Agency (NARA) is responsible for the hydrographic surveys under National Charting Program for the Democratic Socialist Republic of Sri Lanka.

The NARA is the apex national institute vested with the responsibility of carrying out and coordinating research, development and management activities on the subject of aquatic resources in Sri Lanka. The NARA is a statutory body duly established by NARA Act of No. 54 of 1981, during the past 30 years NARA conducted numerous scientific studies in the field of fisheries and aquatic resources. NARA also provides services for development and sustainable utilization of living and non-living aquatic resources.

Under the NARA, the National Hydrographic Office was established in 1984 and has achieved steady progress to its present position as a professional national surveying and charting authority and is accredited to the International Hydrographic Organization (IHO) as the focal point for Hydrography in Sri Lanka.

The principle service of the NHO is carrying out hydrographic surveys through systematic data collection of inshore, near shore, and offshore. These activities in the sea cover up to the limit of Exclusive Economic Zone of Sri Lanka. In addition, hydrographic surveys of Inland water bodies are carried out. NHO produces and disseminate information in support of maritime navigation safety and marine environment preservation, defence, exploration, and research & management plans.

2. SURVEYS

2.1 Coverage of New Surveys

Presently, new surveys are being carried out for coastal and approaches charts.

Index No.	Name of the Chart	Chart No.	Scale	Remark
01	Approaches to Norochcholai	SL113	1:30,000	New Chart
02	Approaches to Kankasanthurai	SL114	1:30,000	-do-
03	Weligama to Colombo Chart	SL115	1:150,000	-do-

In addition to those new surveys, NHO involved in some custom made bathymetric surveys according to the client's requirements. NHO mainly cater consultancy services to local institutes such as Coast Conservation Department., Sri Lanka Ports Authority, Ceylon Fishery Harbour Corporation, Sri Lanka Navy, Shell Gas Company, Ceylon Electricity Board and Ceylon Petroleum Corporation etc.

2.2 VESSELS/ NEW TECHNOLOGIES AND EQUIPMENT

2.2.1 Vessels

RV Samuddrika- Medium Size Survey Vessel

Taranga – Survey Boat

Tharani – Survey Boat

2.1.2 Instruments

RESON Sea Bat 8101 – Multibeam System

DESO 30 dual frequency echo sounder

TI96 NEPTUNE SONAR Dual frequency deep water Transducer (Newly purchased)

SES 2000 – Sub Bottom Profiler

Sea Star 8300HP/Omnistar GPS

RESON SVP 40 Sound Velocity Probe

Leica TCR 1202 Robotic Total Station

2.1.3 Softwares

Caris S-57 Composer

Caris Base Editor

Hypack Max 2015

Caris GIS 4.4

Hypack Gold

Leica GEO Office

PDS 200 Multibeam processing software

Arc GIS 9.2 software is being used for the purpose of GIS and Remote Sensing Applications.

2.3 New Technologies

2.3.1 Chart Adequacy

Knowledge gained for find out and to evaluate existing chart adequacy for safety of navigation and for maintaining the quality of the chart. This procedure was applied to the navigation chart of Colombo port and was evaluated for the adequacy. This procedure will be applied for other available charts for future updates and plans.

2.3.2 Derivation of Near Shore Bathymetry Using High Resolution Satellite Imageries

The necessary skills are adapted to derive the shallow water bathymetry by using high resolution satellite imageries. As we are implementing Marine Spatial Data Infrastructure (MSDI), these bathymetric data will be utilized for marine science applications.

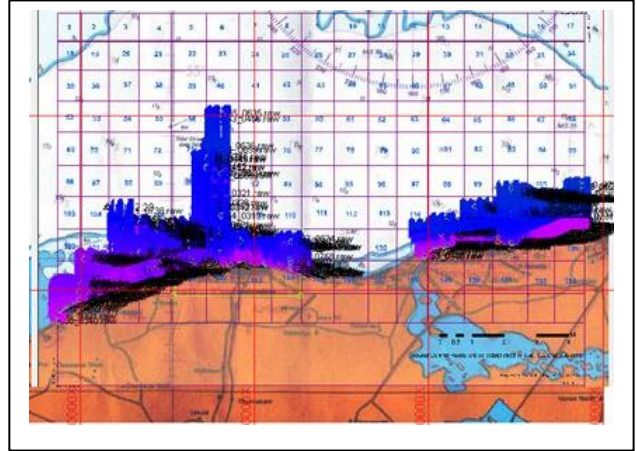
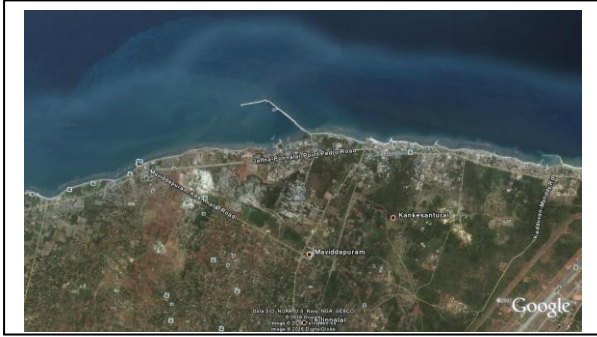
3. NEW CHARTS AND UPDATES - Nil

3.1 ENCs

NHO has produced two ENC cells of band 4 and 5 for Approaches to Hambanthota and Hambanthota harbour which has validated by IC-ENC. NHO is planning to convert existing paper charts to ENC and is willing to do fulfilling the NHO's obligations to become ENC producing nation. Currently, according to the bilateral arrangement, UKHO has produced vital ENC for Sri Lanka.

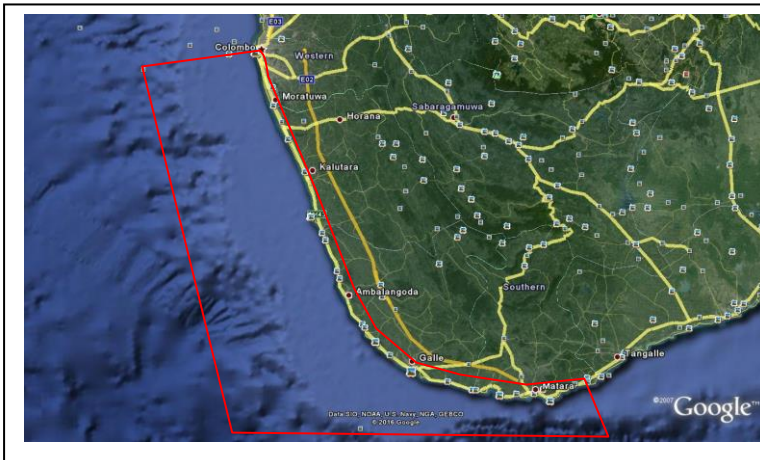
3.2 National Paper Charts

The Kankesanthurai harbour is to be developed as the third international harbour after Colombo and Ruhunu Magampura ports. Therefore, necessary surveys are being conducting for the production of the Approaches to Kankesanthurai and Kankesanthurai harbour chart.

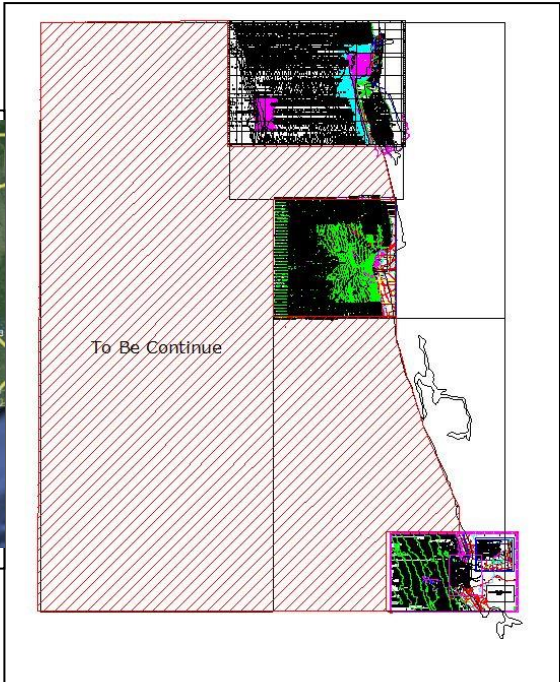


Intended Nautical Chart for Approaches to Kankesanthurai

The data acquisition for the gap filling between Colombo to Weligama are being conducted under National Charting Programme using RV Samuddrika, as existing chart is based on unsystematic surveys conducted during the period of 1940.



Intended Nautical chart for Colombo to Weligama



3.3 Problems Encountered

NHO is continuing to develop and facing challenges in capacity building to improve coverage with new surveys to comply required standards. In particular, early attention should be drawn to development of Multibeam Survey (MBES) capability and the establishment and development of an Electronic Nautical Chart (ENC) production and maintenance capability.

4. NEW PUBLICATIONS AND UPDATES

NIL

5. MARITIME SAFETY INFORMATION (MSI)

5.1 Existing Infrastructure for Transmission

The point of contact for the NAVAREA VIII coordinator is the Harbour Master at Colombo port using his direct email address. The GMDSS facilities are not available in Sri Lanka. Telecommunication Regulatory Commission responsible for the order existing facilities. At the moment facilities available are VHF system channel 16 Medium frequency 2182HZS Communication with Bangalore Maritime Earth Satellite Station.

5.2 Problem Encountered

Still no viable project is in progress to establish GMDSS system in Sri Lanka

5.3 Future Plan

1. Director General of Merchant Shipping will be signing a MOU with NHO/NARA and other relevant stakeholders to develop an overall strategy to ensure that its international obligations and responsibilities as a flag, port and coastal states are met. Maritime Coordinating Committee is formulated and meets regularly to discuss the implementation of IMO instruments. The requirement of establishing coordinated national MSI structure is given priority in this regard.
2. The proposed structure of the MSI organisation and the flow of information are shown in the diagram below.



6. S-55

6.1 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.

Depth	A	B	C
<200m	8.6	5	91.4
>200m	2	0	98

6.1.1 Amplifying Information

Entire area under less than 200m depth has to be surveyed due to the effect of tsunami in the year 2004. Some areas such as main harbour approaches, fishery harbours, lagoons and near shore passages have been surveyed in large scale with modern standards.

6.1.2 Navigational Information (S-53)

Service	Yes	No	Partial	Notes
Local Warnings	√			Via VHF Broadcast
Coastal Warnings	√			Via VHF Broadcast
Navarea Warnings		√		
Information of Ports and Harbours	√			

6.1.3 GMDSS Implementation (IMO Publication 970 – GMDSS Handbook)

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

6.1.4 Status of National Charting within the Limit of the EEZ.

Coverage of charts published by NHO/Sri Lanka

A = percentage covered by INT series, or a paper B = Percentage Covered by Raster

Navigational charts. C = Percentage Covered by ENC's

Purpose / Scale	A	B	C
Offshore passage / Small	100	100	70
Landfall and Coastal passage / Medium	100	100	30
Approaches and Ports / Large	70	100	15

7. CAPACITY BUILDING

7.1 Trainings Received – Foreign (2015)

1. IOC/IODE/Ocean Teacher Global Academy: Marine GIS 5 days Training Course, Kuala Lumpur, Terengganu, Malaysia: One placement
2. IHO/IMO Multibeam 5 days Training course for safety of navigation on Port Operation, Kuala Lumpur, Malaysia: One Placement
3. Multibeam Data Processing 5 days Training Programme at NARA, Sri Lanka under the CBP –NIOHC :10 Placement

Local Trainings:

1. Workshop on GNSS Technology Field Observation and Data Processing, NARA

7.2 Training Needed

NHO has identified requirement of urgent training opportunity for senior staff on following areas

1. CAT A on Bathymetry and Ocean Mapping – 02 Placement
2. MBES experience expert to provide a two week in-country training and advisory visit.
3. MSI course in Colombo for Sri Lankan officers.

Further, NHO is interested in following training programmes.

1. Category B in Hydrography
2. Digital Cartography
3. Workshop on Chart Adequacy

8. OCEANOGRAPHIC ACTIVITIES

8.1 Work Done by the Oceanography Division/NARA in 2015

8.1.1 Sea Glider Deployment in the East Coast

During the year 2015, Three Sea gliders were deployed in Baticaloa area in the east coast and south of Sri Lanka. Two were deployed in August using R/V Roger Revelle US Oceanographic research vessel. These were recovered and one was deployed November using R/V Samuddrika NARA research vessel. The glider will measure salinity, temperature, Oxygen profile in the water column up to thousand-meter water depth. The main objective of this deployment was to study Sri Lanka Dome which appears at the end of summer monsoon and also behaviour of East Indian coastal currents around Sri Lanka.

8.1.2 Oceanographic Survey in the East and South of Sri Lanka

Four Oceanographic (Conductivity temperature depth (CTD), vertical micro-structure profiler) surveys were conducted in east and south of Sri Lanka. Those cruises were done along transects perpendicular to coast line. In addition to collecting Oceanographic data, zooplankton and phytoplankton surveys were in the same area.

8.1.3. Installation of Pressure Inverted Echo-sounders (PIEs)

Two pressure inverted echo-sounders were deployed in south of Sri Lanka at the depths of 500m and 4000ms. The purpose of these deployments was to understand the extent of East Indian Coastal Currents (EICC). Data download will be done in August, 2016.

8.1.4 Tide Gauge Network

Currently three real time transmitting tide gauges covering west, south east and east coasts are operating in Sri Lanka, which are part of Indian Ocean Tsunami Early Warning System and GLOSS. Colombo station has equipped with 02 pressure sensors, 02 floating gauges and radar sensors. It measures sea level every 01 minute and transfers data every 15 minutes via Japanese Meteorological Satellite (JMA) and MeteoSat. Trincomalee and Kirinda Stations measure sea levels every 01 minute and transfer data every 15 minutes via MeteoSat. All three stations are equipped with pressure and radar sensors. Real time data are also in GTS. Future real time

station was planned to be establish in Weligama area as part of technical support to the Global Sea Level Observing System and Indian Ocean Tsunami Warning System.

9. OTHER ACTIVITIES

9.1 DISASTER PREVENTION

Ocean Observation Centre

The centre is dedicated to provide ocean based disasters information and technical assistance to all relevant authorities. The centre collaborates with the Ministry of Fisheries and Aquatic Resources, Ministry of Disaster Management and Human Resources, the Disaster Management Centre (DMC), the Department of Meteorology in respect of ocean based disasters, early warning and mitigation of impacts from ocean based natural disasters.

In addition to the ocean based disaster prevention and mitigation activities, the centre gathers and analyses oceanographic data within our maritime boundaries for other Research and Development applications such as fisheries, safety navigation, climate and environmental studies and coastal development planning.

9.2 MSDI PROGRESS

NHO has completed the development of web interface and database system using Geonetwork and Geoserver for implementing the MSDI. The system is fully facilitated to absorb both raster and vector geospatial data under ISO19139 standard.

10. CONCLUSION

With the new capacity, NHO is striving to carryout surveys for coastal chart productions amidst budgetary constrain to provide updated nautical information for marines and keep in phase with the modern skills such as developing MSDI, developing capacity for ENC production, deriving shallow water bathymetry by using high resolution satellite imageries and evaluating existing charts for adequacy.

In this endeavour NHO seeks assistance and co-operation from NIOHC especially for the capacity building of human resources in NHO.

Sri Lanka / Sri Lanka

Country information / Informations sur le pays / Información sobre el país

Declared National Tonnage - Tonnage national déclaré -Tonelaje Nacional Declarado	187925 tons (2013)
National day -Fête nationale -Fiesta nacional	4 February
Date ratification IHO Convention - Date ratification Convention OHI - Fecha ratificación Convención OHI	11/07/1983

Official Representative to IHO (as designated by Member Government)
Représentant officiel à l'OHI (tel que désigné par le Gouvernement Membre)

NATIONAL HYDROGRAPHIC OFFICE NATIONAL AQUATIC RESOURCES RESEARCH AND DEVELOPMENT AGENCY

Contact information / Informations de contact / Información de contacto

National Hydrographer or equivalent -Hydrographe national ou équivalent -Hidrógrafo Nacional o equivalente	Mr. A.N.D. Perera , BSc, M.Sc, Cat B (Hydrography), Cat A (Hydrography) Postal address: Crow Island Mattukkuliya, Colombo, 15, Sri Lanka Tel: + 9411 2521705 Fax: + 9411 2521699 E-mail: nho@sltnet.lk
Other point(s) of contact -Autre(s) point(s) de contact -Otros punto(s) de contacto ,	Senior Hydrographic Surveyor: Mr SRC Ranaweera, Cat A(Hydrography), Master in Ocean Mapping, MBS, PDip in Bus. Mgt, B.Sc (Hons) Surveying Sciences. Hydrographic Surveyor: Ms. YMRN Kumari, Cat A(Hydrography) M.Sc (Geoinformatics), B.Sc (Hons) Surveying Sciences Chief Systems Analyst: Mr S.W.S. Weerasinghe, B.Sc, Cartographer: Mr. SRTP Sinhabahu Tel: + 9411 2521705 Fax: + 9411 2521699 E-mail: nho@sltnet.lk
Web site -site web -sitio web	http://www.nara.ac.lk

Date of establishment -Date de mise en place -Fecha de constitución	March 1984
Top level parent organization -Organisme mère - Organización asociada de nivel superior	National Aquatic Resources Research and Development Agency under the Ministry of Fisheries & Ocean Resources

Principal functions of the organization or the department -Attribution principales de l'organisme ou du département -Principales funciones de la Organización o el departamento	<ul style="list-style-type: none"> • Control and co-ordination of all hydrographic surveying and nautical charting activities in Sri Lanka. • Collection, processing and publication of hydrographic data and nautical information. • Establishment of standards and procedures for gathering, processing and display of hydrographic data and nautical information. • Training of personnel. 		
Annual operating budget -Budget annuel -presupuesto anual	45 000 000 (Rupees)		
Total number of staff employed - Effectifs totaux -Número total de personal empleado	44		
Total number of paper charts published -Nombre total de cartes papier publiées -Número total de cartas de papel publicadas	10		
Detail of surveying vessels/ Aircraft - Détail des bâtiments hydrographiques/aéronefs -Detalle de buques hidrográficos/Aeronaves	Displacement -déplacement -Desplazamiento	Commissioning Date -date de mise en service -Fecha de puesta en servicio	Crew -équipage -Personal
"RV Samuddrika",	25 MT	2012	14
THARANGA-Small Boat		1992	5
"Bar Reef" -Small Boat		2014	5
Other information of interest -Autres informations utiles -Otra información de interés	Production of maps on Fishery Resources. Providing of Hydrographic data for Coastal Zone Management, Environmental Pollution, Coastal Line Protection, Harbour Development, Mineral Sand Exploration & Exploitation, etc.		