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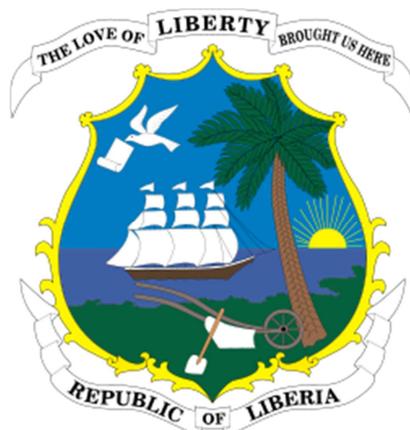
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IHO Capacity Building Programme

IHO TECHNICAL VISIT TO LIBERIA 3 - 5 February 2016

REPORT

12 April 2016



Executive Summary

In 2014, a request for an IHO technical visit to the Republic of Liberia was approved by the IHO Capacity Building Sub-Committee to assess the current status of nautical charting and hydrography in the country and to provide advice to the government and to stakeholders on a way ahead. The visit had to be postponed due to the regional Ebola epidemic which gravely affected Liberia from August 2014 to September 2015.

The International Hydrographic Bureau (IHB) and the United Kingdom Hydrographic Office (UKHO) agreed to jointly form the visiting team. The visit was conducted from 3 to 5 February 2016, supported by the Liberia Maritime Authority (LiMA).

The Republic of Liberia had never received an IHO technical visit prior to this visit.

Liberia is one of the least developed countries in the world and is emerging slowly from a long civil war and the ravages of the Ebola epidemic. The Liberian Registry is the second largest in the world after Panama. It includes over 3,900 ships of more than 131 million gross tons, which represent 11 % of the world's ocean going fleet. The Registry is operated by a private company based in the USA.

The Republic of Liberia has been a member of the International Maritime Organization (IMO) since 1959 and is a signatory to the International Convention for the Safety of Life at Sea (SOLAS), but is not a member of the International Hydrographic Organization (IHO). It has observer status within the Eastern Atlantic Hydrographic Commission (EAHC).

There is a very high level of awareness of the importance of hydrography throughout the stakeholder community and most stakeholders are fully knowledgeable of the issues that would benefit from the establishment of a national hydrographic framework. The most pressing issues relate to critical coastal erosion and to the delimitation of maritime boundaries.

Liberia has currently no national capability for nautical chart production. The UKHO is the de facto Primary Charting Authority (PCA) for Liberia. The underlying surveys are generally old (c. 1970) and the UKHO receives little updating information. There was no formal agreement between Liberia and the PCA until this visit when the process for establishing an agreement was initiated between the LiMA and UKHO.

There is no hydrographic surveying capability in Liberia. Some surveys are conducted in the port areas by private contractors in support of dredging operations. Exploration surveys are conducted by international oil companies in the Economic Exclusive Zone (EEZ) but the data is not made available to the PCA.

There is no capability for promulgation of Maritime Safety Information (MSI) in Liberia although the regional Maritime Rescue Coordination Centre (R-MRCC) operated by the LiMA in Monrovia is identified by the NAVAREA II Coordinator as the national MSI coordinator. Some MSI have been passed to the NAVAREA II Coordinator via European MRCCs.

LiMA is the recognized leader in maritime affairs. However the institutional framework relevant to hydrography and charting is very complex with a combination of ministries / autonomous agencies / operators / contractors who operate in this space without a clear distribution of their roles and responsibilities, leading to duplication of effort and fragmentation of limited resources and competencies, in particular related to GIS expertise and operation. A number of stakeholder organizations are involved in GIS activities but with no clear understanding of the Spatial Data Infrastructure (SDI) concept.

Establishing a National Hydrographic Committee under the chairmanship of LiMA and formalizing the relationship and the flow of information with the PCA are recommended as the first steps towards meeting Liberia requirements and obligations related to the provision of hydrographic services.

Liberia is urged to apply for IHO membership in order to benefit fully from the Capacity Building Programme in support of the implementation of the recommendations of the visit.

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1. Background

An IHO assessment visit to Liberia was initially requested in June 2014 by the Liberia Maritime Authority (LiMA). After a positive assessment by the IHO Capacity Building Sub-Committee (CBSC), the visit was included in the Capacity Building Work Programme (CBWP) for 2014 and planned in December 2014. Unfortunately, the development of the Ebola outbreak during the second semester of 2014 led to the decision to postpone the visit in early November 2014. The visit was rescheduled in the CBWP for 2015.

The IHB reinitiated contact with LiMA in September 2015 and this led to the re-planning of the visit in early February 2016.

2. General situation

Sources: [1], [2], [3], [4], [5], [6]

The Republic of Liberia is a country on the West African coast. It is bordered by Sierra Leone to its west, Guinea to its north and Côte d'Ivoire to its east.

Liberia was the first African State to become independent in 1847. One of the lowest income countries in the world, Liberia is emerging slowly from the long civil war which caused 270 000 deaths from 1989 to 2003. The Ebola outbreak affected the country from March 2014 to May 2015 causing more than 4 700 thousand deaths and disorganizing the economic and social base.

Geographic data

Area: 111 370 km²

Coastline: 580 km

Capital: Monrovia

Official language: English

Currency: Liberian dollar (LRD) (1 LRD = 0.011 USD)

National day: 26 July

Demographic data

Population: 4.5 million

Main city: Monrovia (1 million)

Growth rate: 2.7%

Life expectancy: 57 years

Literacy rate: 61%

Human development index: 0.388 (174/187)

Economic data

GDP (nominal): USD 2.028 billion (estimate 2014).

- Agriculture: 39%
- Industry: 16%
- Services: 45 %

Liberia is the 152nd largest export economy in the world and the 78th most complex economy according to the Economic Complexity Index (ECI). In 2013, Liberia exported USD 1.12 billion and imported USD 6.11 billion.

The Liberian Registry is the second largest in the world after Panama. It includes over 3,900 ships of more than 131 million gross tons, which represent 11 % of the world's ocean going fleet. The Liberian Registry, is administered by the Liberian International Shipping and Corporate Registry (LISCR), a wholly US owned and operated company headquartered in Vienna, Virginia, USA. The Registry is rated one of the top open registries in the world by the Paris MOU. The revenue from the Registry (USD 15-20M) represents about 3% of total government revenue. The relations between the government and the LISCR are currently regulated by the Public Financial Management Act of 2009.

The top exports of Liberia are Iron Ore (USD 362M), Passenger and Cargo Ships (USD 325M), Rubber (USD 195M), Special Purpose Ships (USD 45.3M) and Rough Wood (USD 35.6M). Its top imports are Passenger and Cargo Ships (USD 3.07B), Special Purpose Ships (USD 1.07B), Refined Petroleum (USD 703M), Rice (USD 128M) and Iron Structures (USD 51.3M).

The top export destinations of Liberia are Poland (USD 370M), China (USD 139M), the United States (USD 93.2M), Spain (USD 79.4M) and France (USD 65.5M). The top import origins are South Korea (USD 3.51B), China (USD 927M), Poland (USD 338M), India (USD 185M) and the United States (USD 154M).

Since 2003, Liberia has enjoyed peace, two democratic elections and nearly a decade of economic recovery. During this time, several development plans were implemented: the 150 Action Plan (2006), the Interim Poverty Reduction Strategy (2007) and the complete Lift Liberia Poverty Reduction Strategy (2008–2011). These strategies and plans eased some of the immediate hardships Liberians suffered as a result of the war. However, much remains to be done in order to transition from recovery to prosperity and Liberia is still one of the lowest-income countries in the world. In 2012, the Government of Liberia embarked on a medium-term economic growth and development strategy described in the Agenda for Transformation (AfT), in order to guide development activities over the 2012-2017 period. The AfT provides a roadmap for Liberia's transformation from post-conflict recovery toward its long-term vision of becoming an inclusive middle-income country by 2030. Its implementation was set aback by the Ebola epidemic. The current (2015-16) budgetary situation is described as challenging, with the conjunction of the effects of the Ebola epidemic and the continued fall in global prices of the country's key export commodities. The priorities defined by the AfT include education, energy, health, infrastructure, social protection and poverty reduction. Liberia faces also the challenge of taking responsibility for its own security as the UN Mission in Liberia (UNMIL) draws down.

According to the Organisation for Economic Co-operation and Development (OECD) [7], Liberia received USD 744M in net Official Development Assistance in 2014. The two top donors were the United States and European Union Institutions.

The political system is preparing for a possible 2016 constitutional referendum, but is also already gearing up to the 2017 general elections, which will choose the new Head of State as President Ellen Johnson Sirleaf cannot be elected for a third term.

3. Relation with the IHO

Liberia is not a member of the IHO. Liberia is an observer to the Eastern Atlantic Hydrographic Commission.

Invitations to join the IHO were issued by the IHB in 1962 and 1967. Liberia participated as an observer in the 10th International Hydrographic Conference in 1972 and announced its intention to join the IHO. However, in 1973, the Ministry of Foreign Affairs informed the IHB that "... the Government of Liberia is not prepared to become a member of IHO at this time".

Contacts with the authorities of Liberia were re-initiated successively in 1979 and 1987. Liberia was represented at the 2nd EAHC Conference held in Cadiz, Spain in 1988 and reported on the lack of proper institutions to address hydrographic requirements.

Contacts were re-established in 2002 through Liberia Permanent Mission to the International Maritime Organization (IMO) but did not prosper.

Liberia attended the regional seminar on safety of navigation in the West and Central African region which was held in Accra, Ghana in April 2014, co-organized by IMO, IHO and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). The request for an assessment visit was an outcome of the seminar.

As an IHO Member State, Liberia would contribute the maximum number of 27 shares (tonnage greater than 29 M) which corresponds to an annual contribution of EUR 108,000.

4. Preliminary assessment

4.1. Maritime activities

The maritime zones of Liberia are provisionally defined by Executive Order No. 48 dated 10 January 2013. This regulation refers to lines of delimitation “as drawn on official charts”. Liberia ratified the United Nations Convention on the Law of the Sea (UNCLOS) in 2008. A National Commission on the Delimitation of Liberia’s Maritime boundaries chaired by the Ministry of Foreign Affairs was established in 2010 and seems to have been reactivated recently to initiate an assessment of any potential claim to extend the continental shelf in accordance with the United Nations Convention on the Law of the Sea (UNCLOS) and to prepare negotiation of the maritime boundaries with the two bordering States (Sierra Leone and Côte d’Ivoire). Work has been undertaken through a consultant to determine the baseline of Liberia. But this work is yet to be finalized. The deadline for submitting continental shelf extension claim is 2018. The Commission has recently decided to look for donor funding and technical assistance to complete the baseline study and prepare the claim.

Liberia Environmental Protection Agency is considering the establishment of marine protected areas (MPA) and developing the appropriate regulatory framework for its territorial sea. However, protected areas have been established in inland waterways.

The main strength of the maritime sector is the ship Registry. However a framework for the development of port and coastal activities has been set up. Related activities which are carried out include port State control, search and rescue, protection of the marine environment and training of seafarers. The fishing industry is being developed. The offshore industry is also developing but has been greatly affected by the current downturn in the oil market. The civil war has badly damaged the tourist industry.

There are four “small” ports along the coast of Liberia, from west to east: Monrovia and Buchanan, which are the main ports of the country, and Greenville and Harper/Cape Palmas. All ports are susceptible to siltation and require periodic dredging. The volume of siltation is estimated at 500,000 m³/year and the optimal dredging cycle is considered to be two years. The last significant dredging operations took place in 2012. There is expectation that traffic (currently at 5 or 6 vessel movements per week in Monrovia) will increase in the future. A private consultancy firm (NIRAS) has produced a 2015-2035 master plan for port development which is yet to be acted upon.

Coastal erosion - caused by longshore drift and aggravated by sand mining (which is now prohibited) - is a major issue for Liberia to such an extent that the Government is considering the re-location of coastal communities.

The inland waterways system comprises six major rivers which were navigable up to the 1980s. In the absence of maintenance they are now accessible to small pleasure craft only.

The AfT acknowledges a number of environmental challenges affecting the marine and coastal areas. They include loss of biodiversity; coastal erosion and pollution of coastal waters from raw sewage; mangrove draining and reclamation in urban areas; sewage and solid waste disposal and management; and numerous climate change related issues—loss of productive land and infrastructure along the coast and sea intrusion into fresh water supply are increasingly a problem. In association with the development of offshore petroleum activities, new port infrastructures and pipe-laying to service oil and gas fields are being considered. On the other hand these activities can lead to pollution of coastal waters from oil residues and spills, threatening coastal residents, tourism, and fishing industries.

The objectives of the AfT related to the maritime sector include:

- Police Liberia's territorial waters and Exclusive Economic Zone against illegal fishing and other illegal activities as well as conduct search and rescue missions;
- Develop a National Border Management Strategy to ensure that Liberia's land, sea and air borders are effectively managed by all relevant agencies.
- Improve the efficiency, transparency, environmental sustainability, and safety of transport services nationwide, including alternate modes (e.g., rail and water);
- Continued improvement of management and facilities at sea ports and airports.

As a least developing Country (LDC), Liberia has a low capacity of adaptation to climate change, hence needing support in that respect. A National Adaptation Programme of Action (NAPA) has been developed with the support of the United Nations Environment Program (UNEP) and the Global Environment Facility (GEF). Current implementation projects address the mitigation of coastal erosion in the Buchanan area and a unit devoted to integrated coastal zone management has been established under the authority of the Ministry of Lands, Mines and Energy (MLME).

Off-shore exploration is currently largely in abeyance due to low oil prices. Seismic surveys which have been conducted by international oil companies in depth from 950 to 1,400 meters have yet to identify potentially exploitable reserves. The rights, titles and interests of the Republic of Liberia in the deposits and reserves of liquid and gaseous hydrocarbons are held by the National Oil Company of Liberia (NOCAL). Oil spill response is addressed through the Global Initiative for West, Central and Southern Africa (GI WACAF Project). Launched in 2006, this project is a partnership between the IMO and IPIECA, the global oil and gas industry association for environmental and social issues, to enhance the capacity of 22 West, Central and Southern African countries to prepare for and respond to marine oil spills.

A "Fisheries and Aquaculture Policy and Strategy" was adopted in 2014 to guide the development and management of the fisheries sector and contribute to the social and economic development and well-being of the nation.

A revision of the National Transport Policy and Strategy adopted in 2009 has been undertaken and the development of coastal and river transportation has been identified as a high priority item to alleviate the congestion of road transport. Such development would need a re-survey programme.

4.2. *International relations*

Liberia is a founding member of the United Nations. Liberia benefits from a pluriannual programme funded by the UN Development Programme (UNDP). The current cycle terminates in 2017 and planning for the next cycle is underway.

Liberia is also a member of many international organizations, participating in the African Union (AU), the UN Economic Commission for Africa (ECA), the Economic Community of West African States (ECOWAS), the International Labour Organization (ILO), IMO, UNESCO, the World Health Organization (WHO), the World Meteorological Organization (WMO), the International Bank for Reconstruction and Development (IBRD), the World Intellectual Property Organization (WIPO), and the International Monetary Fund (IMF).

Although Liberia is listed as a member of UN-GGIM Africa, Liberia was not represented at the inception meeting convened by ECA and held in Tunis, Tunisia in December 2014.

Liberia joined the WMO in 1974 but has not paid its contribution for about twenty years. Liberia is suspended of its voting rights.

Liberia joined the IMO in 1959 and is a signatory to the SOLAS Convention. Liberia is the second contributor to the IMO budget: its contribution (GBP 3M in 2016) represents almost 10% of the total contribution. Liberia has a seat at the IMO Council. Mr Binyah C. Kesselly, Commissioner and Chief

Executive Officer of LiMA, was elected first vice-president of the Assembly at its 29th session (December 2015).

The Liberian Registry completed a successful external audit in March 2007 under the Voluntary IMO Member State Audit Scheme (VIMSAS). The audit was limited to the obligations of the flag State [13]. The next audit will be conducted under the IMO mandatory scheme which entered into force on 1 January 2016. It will address the implementation of all IMO instruments relevant to Liberia as a coastal State, port State, and flag State. According to the seven-year cycle agreed by IMO Member States, it is expected that Liberia could be audited as early as 2020 [14].

Liberia is a member of the Maritime Organization for West and Central Africa (MOWCA).

In accordance with the global IMO Search and Rescue (SAR) Plan, Liberia operates in Monrovia one of the five Regional Maritime Rescue Coordination Centres (R-MRCC). The centre was inaugurated by the Secretary General of IMO in 2009. It covers the whole region encompassing the territorial waters of Liberia and her four neighbouring countries as of the signing of the November 2007 Multilateral Agreement between the respective governments of Côte d'Ivoire, Ghana, Guinea, Liberia, and Sierra Leone. The R-MRCC has provided some MSI to the NAVAREA II Coordinator via European MRCCs.

Liberia is not a member of the following organizations: the Intergovernmental Oceanographic Commission (IOC), IALA, the Group on Earth Observation (GEO) and AfriGEOSS.

In 2014, the European Union adopted a “Strategy on the Gulf of Guinea” [8]. Covering all coastal states from Senegal to Angola, the strategy focuses on four specific objectives:

1. Building a common understanding of the scale of the threat in the Gulf of Guinea and the need to address it among the countries in the region and the international community.
2. Helping governments of the region build robust institutions, maritime administrations and multiagency capabilities to ensure maritime awareness, security and the rule of law along the coast.
3. Supporting prosperous economies in this region in line with national and regional development strategies, to create employment and assist vulnerable communities to build resilience and resist criminal or violent activities.
4. Strengthening cooperation between the countries of the region and the regional organisations to enable them to take the necessary actions to mitigate the threats at sea and on land.

The Strategy is being implemented through the “Gulf of Guinea Action Plan 2015-2020” which was adopted in 2015 by the European Council [9]. One of the expected results is “helping governments of the region build robust institutions, maritime administrations and multiagency capabilities to ensure maritime awareness, security and the rule of law.”

A number of activities funded by the European Union or its Member States are on-going or under preparation [9]. The EU’s “Support to the Maritime Transport sector in Africa” programme has three projects (started in July 2014 - EUR 5M - and will last until 2016) with a focus on West and Central Africa, on maritime safety, port efficiency and port state control, data upgrading and data exchange, funded by the European Development Fund (intra-ACP). AU, ECOWAS, and MOWCA are associated to this Programme; all 28 MOWCA countries are eligible to benefit.

In 2014, the National Port Authority (NPA) signed a loan agreement with the Kuwait Fund for Arab Economic Development for assisting in the financing of the Port of Greenville Rehabilitation Project. This project is supported also by the Putu Iron Ore Mining Company (PIOM) [10].

4.3. National hydrographic and charting capabilities

During the 1970s, attempts to develop some capacities were supported by the USA. At that time a small hydrographic unit was established within the Department of Lands, Surveys and Cartography. This unit was destroyed during the civil war.

According to the preliminary assessment questionnaire provided by LiMA (see Annex A), the current status of hydrographic services provided for Liberia is as follows:

- Maritime Safety Information (MSI): not provided; wrecks and obstructions are reported to the UK Hydrographic Office (UKHO) by vessels and port authorities (*Note: R-MRCC Monrovia is identified as the point of contact for National Coordinator in NAVAREA II*);
- Nautical charts (paper and ENC): provided through the UKHO, without any formal agreement between Liberia and UK;
- Tide tables: “available on Internet” (*Note the Admiralty EasyTide service available on the UKHO website provides predictions for the following ports in Liberia: Baffu Bay, Buchanan, Cape Mount, Cape Palmas, Cestos Bay, Farmington River, King Wills Town, Monrovia, Sinoe Bay, and Subbubo Point*);
- Tides and water level measurements: not provided;
- Hydrographic surveys: not provided with the exception of pre-dredge and post dredge surveys contracted by the National Port Authority within port limits.

In spite of six decades of maritime awareness, the requirements of SOLAS and UNCLOS related to hydrographic services are not implemented. There is no national statute regulating the provision of these services.

The questionnaire reports the lack of competencies in hydrographic surveying and tides measurements.

The questionnaire reports the lack of equipment/platform available for the promulgation of MSI, hydrographic surveying, nautical cartography and tidal observations. The Liberian Coast Guard operates six small patrol boats which could be used for hydrographic surveying, subject to installing the appropriate equipment.

The Government of Liberia established in 2004 an autonomous agency, the “Liberia Institute of Statistics and Geo-Information Services” (LISGIS) responsible for establishing, developing and maintaining a holistic National Statistical and Spatial Data System (NSSDS). LISGIS operates the Liberia Data Portal which is currently limited to statistical services [11]. LISGIS is in the process of creating an initial GIS capacity (training and equipment).

The national mapping agency is the Department of Lands, Surveys and Cartography (DLSC) under the responsibility of MLME. Some employees have competencies in geospatial data management, topographic surveying and mapping, cartography and cadastral mapping. The questionnaire reports the lack of competencies in aerial and/or satellite image processing and mapping. Only a small part of the 1:50k topographic maps have been digitized.

The Liberian Hydrological Service (LHS) of MLME is responsible for the coastal adaptation project.

The seismic survey data collected in Liberia waters is held by the London Office of TGS NOPEC on behalf of NOCAL. TGS NOPEC, headquartered in Norway, is a geophysical company which provides geoscience data to oil and gas exploration and production companies worldwide. TGS’s database stores marine and land geophysical data mainly from 2D and 3D seismic surveys [12].

In relation with the adoption of a National Disaster Management Plan, GIS training has been organized by the Ministry of Internal Affairs for ten staff.

The technical team notes that a number of stakeholder organizations are involved in GIS activities with no clear understanding of the Spatial Data Infrastructure (SDI) concept.

4.4. *Hydrographic services provided by the UKHO*

Maritime Safety Information

Maritime Safety Information (MSI) consists of the promulgation of navigational and meteorological warnings, search and rescue information and other urgent safety-related information, including urgent information related to charts. IHO Publication S-53 - *Joint IMO/IHO/WMO Manual on Maritime Safety Information* provides detailed information about MSI. In addition MSI in its broadest sense includes navigational chart and publication maintenance.

There is currently no significant flow of Maritime Safety Information (MSI) provided to the Charting Authority by Liberia. This means that the existing charts published and maintained by the UKHO do not necessarily contain the latest navigationally significant information, nor are mariners arriving from overseas aware of new navigationally significant information through the World-Wide Navigational Warning Service (WWNWS).

The routine maintenance of charts and publications, to include changes in buoyage and man-made topography for example, is as important as new survey data if charts are to be maintained to the standard required for safe navigation. This information has to come from the nation State and be passed to the Primary Charting Authority (PCA - UKHO) for action. In the case of Liberia, little local information has been provided. Chart corrections, based on information supplied to the UKHO, average less than one per annum. The following table shows the current publication date of charts and ENC's covering Liberia, together with a reference to the last notice to mariners (NtoM) that has been issued and the total number of NtoMs that have been applied to each chart since its publication. The tables are correct to 25 January 2016.

BA Chart	Title	Year of Chart Publication (Last NtoM/Year)	NtoMs issued since Publication *
1362	Harper to Sassandra (1:300 000)	Ed 1, 19 June 1992 491/13	11
1363	Cape Saint Ann to Monrovia (1:300 000)	Ed 1, 28 June 1991 5512/2012	11
1364	Monrovia to Greenville (1:300 000)	Ed 1, 5 Mar 1993 5018/15	10
1365	Greenville to Harper (1:300 000)	Ed 1, 5 Mar 1993 2807/10	2
1980	Greenville and Harper with Approaches Approaches to Harper (1:75 000) Harper (1:12 500) Approaches to Greenville (1:100 000) Greenville (1:25 000)	Ed 1, 19 June 1992 Ed 2, 30 Sept 2004 3576/13	3 2
2478	Approaches to Monrovia Approaches to Monrovia (1:120 000) Monrovia (1:25 000)	Ed 1, 8 Dec 1989 Ed 2, 29 Apr 2004 3465/13	8 6
3139	Monrovia to Sassandra (1:1 000 000) INT 2086 (SHOM)	Ed 1, 8 Apr 1994 5512/2012	9

BA Chart	Title	Year of Chart Publication (Last NtoM/Year)	NtoMs issued since Publication *
1147	Cabo Roxo to Monrovia (1:1 000 000) INT 1085 (SHOM)	Ed 1, 28 Apr 1995 5093/15	24
3648	Approaches to Buchanan Approaches to Buchanan (1:100 000) Buchanan (1:25 000)	Ed 1, 8 Dec 1989 Ed 2, 19 Aug 2004 5018/15	2 6

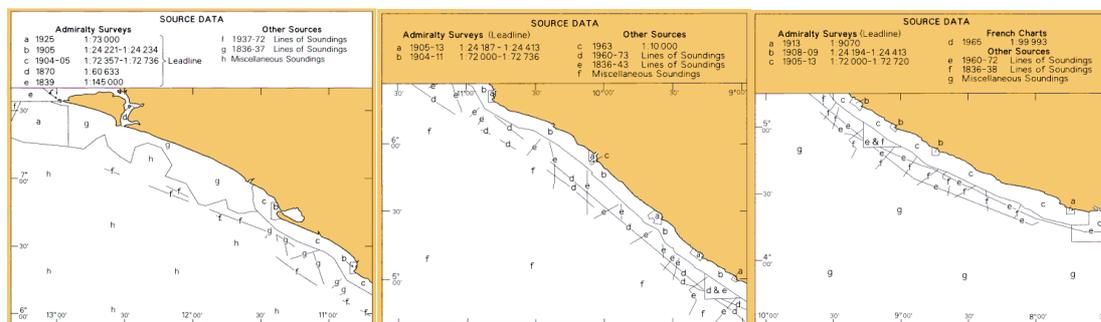
* Note. On smaller scale charts not all NMs relate to Liberia

ENC	Title	Compilation Scale	Edition	Corrected to
FR271850	Cabo Roxo to Monrovia	1:700 000	1.000	14/12/2015
FR223030	Monrovia to Sassandra	1:1 001 850	1.005	12/03/2015
GB301363	Argyle Pt to Cape Mount Bay	1:180 000	3.000	28/06/2012
GB301364	Bassa Point to Greenville	1:180 000	4.001	25/09/2015
GB301365	Off the Coast of Greenville	1:180 000	1.001	05/10/2011
FR373840	Greenville to San Pedro	1:350 000	1.000	16/11/2015
GB302478	Approaches to Monrovia	1:90 000	2.005	29/07/2013
GB402478	Monrovia	1:22 000	4.001	02/12/2013

Charting responsibilities have never been discussed with the UKHO in a formal setting. In 2013, the UKHO proposed a cooperation agreement with the National Ports Authority of Liberia but no response has been received. For all practical purposes, there is no effective communication between the maritime authorities in Liberia and the UKHO's chart compilers and maintainers in Regional Team 4 – the section responsible for producing and maintaining the charts of Liberia. This means that new information, such as changes in navigation aids or new port developments do not appear on the charts as updated information.

Similarly there appears to be no linkage in-country for government agencies to feed information through to the mariner via chart and publication amendments or navigational warnings.

Hydrographic Surveying



During the period 1904 - 1913 the British Admiralty surveyed the coast of Liberia, the seaward limit of these surveys is roughly equivalent to a depth of 30m. Beyond these surveys the depths are derived from lines of soundings and miscellaneous passage soundings gathered from a variety of sources. There is currently no national hydrographic capability in Liberia.

The main ports of Monrovia, Buchanan, Greenville and Harper have been surveyed between 2004 and 2012. The surveys were of a very limited extent and either generated block correction or textual NtoMs.

The UKHO reported in 2004 the status of surveys in IHO Publication C-55 as follows:

Country	INT Region	0-200 Adequate	0-200 Re-survey	0-200 No-survey	200+ Adequate	200+ Re-survey	200+ No-survey	Comment
Liberia	G	2	22	76	0	0	100	(1)

(1) Priorities are:

- a. Maritime Shipping Routes: vigias W of Greenville and in the approaches to Buchanan and Harper require investigation.
- b. Ports and Approaches: Side-scan sonar coverage is required to supplement modern surveys in the ports of Monrovia, Buchanan, Harper and Greenville.

Additional hydrographic data covering Liberian waters has been gathered by a number of foreign governments, under regional development or research programmes and for oil exploration but has not been reflected in the current inventory.

Nautical Charting

There is no national capacity for either paper or digital chart production¹.

The US National Geospatial-Intelligence Agency (NGA) publishes charts for the coast of Liberia but they do not seem to be used outside the US military.

The UKHO provides paper chart coverage of Liberia at both small and large scales together with ENC coverage. It can be seen from the IHO ENC Catalogue that the UKHO ENC coverage is augmented with French coverage at Scale Band 3 (or Coastal cover) towards the east of the country. There is no nautical chart production facility or sales outlet in Liberia. Charts must be obtained from agents in Cape Town (South Africa), Paranagua (Brazil), Las Palmas de Grand Canaria (Islas Canarias) or elsewhere in the world.

The nautical charts of Liberia published and maintained by the PCA (UKHO) on behalf of the government of Liberia have all been modernised. This means that depths are shown in metres, modern chart symbols are used and the charts can be used directly with GNSS. However, because much of the data on which the charts are based is old a warning note is displayed on the larger scale charts.

SATELLITE-DERIVED POSITIONS AND CHART ACCURACY

Positions obtained from satellite navigation systems, such as GPS, are normally referred to WGS84 Datum. Such positions can be plotted directly on this chart. However, due to the age and quality of some of the source information, such positions may be more accurate than the charted detail.

A comprehensive analysis of the existing charting situation in Liberia is contained in Annex B.

¹ The US National Geospatial-Intelligence Agency (NGA) publishes charts for the coast of Liberia but they do not seem to be used outside the US military.

It was apparent during the IHO visit that a comprehensive chart updating programme is required if the existing chart coverage of Liberia is to meet national needs.

4.5. Awareness of the importance of hydrography and charting

The questionnaire, as well as the visit, shows a “very high” level of awareness and priority in government and at the higher levels of the administration regarding the importance and value of hydrography to the country. In addition to ensuring the safety of navigation, the protection of the marine environment, oil exploration, boundary delimitation, coastal defence against erosion, the drafting of national disaster management plan and oil spill response contingency plan are identified as requiring knowledge of the seabed. Most stakeholders are fully knowledgeable of the issues.

4.6. Institutional framework

The institutional framework relevant to hydrography and charting is very complex with a combination of ministries / autonomous agencies / operators / contractors who operate in this space without a clear distribution of their roles and responsibilities, leading to duplication of efforts and fragmentation of limited resources and competencies, in particular related to GIS expertise and operation.

Based on the preliminary questionnaire and the on-site visit, the team has identified the following stakeholders potentially concerned with the provision (contributor) and use (beneficiary) of hydrographic services.

a) Ministries

- Ministry of Lands, Mines and Energy
 - o Department of Lands, Surveys and Cartography (contributor: mapping)
 - o Division of Hydrological Services (beneficiary: coastal protection)
 - o Integrated Coastal Zone Management Unit (beneficiary: coastal zone management)
- Ministry of Agriculture
 - o Bureau of National Fisheries (beneficiary: development and management of fisheries)
- Ministry of Finance, Planning and Development (funding: authority for UNDP-funded national development and infrastructure projects)
- Ministry of Public Works (beneficiary: infrastructure inventories and infrastructure project management)
- Ministry of Internal Affairs (beneficiary: prevention and management of marine disasters)
- Ministry of National Defence
 - o National Coast Guard (contributor: MSI, survey platforms; beneficiary: surveillance, SAR)
- Ministry of Transport (beneficiary: design and implementation of river and coastal transport plans)
- Ministry of Foreign Affairs (contributor: relations with international organizations and supervision of bilateral agreements; beneficiary: maritime boundaries negotiations)

b) Autonomous agencies

- Liberia Maritime Authority (contributor: coordinator; beneficiary: safety of navigation, implementation of the IMO Instruments Implementation Code and protection of the country's marine shores and inland waterways).

LiMA has authority over two other stakeholders:

- LISCR (contributor: funding through Registry fees; beneficiary: safety of navigation)
- R-MRCC (contributor: MSI; beneficiary: operation support)

- National Port Authority (contributor: MSI, port surveys; beneficiary: port management)
 - Environmental Protection Agency (beneficiary: establishment and monitoring of MPAs and coastal protection programmes)
- c) *Public corporations*
- National Oil Company (contributor: exploration surveys and beneficiary: policy implementation)
- d) *Other stakeholders*
- LISGIS (contributor: GIS services)
 - Port operators (contributor and beneficiary through the NPA)
 - Fishing industry (beneficiary)
 - Oil, gas and mining industry (contributor: surveys; beneficiary: operation support)

5. Agenda of the visit

The visit was conducted from 3 to 5 February 2016 by Gilles Bessero, Director, IHB and Jeff Bryant, International Capacity Building Manager, UKHO. The programme of the visit was coordinated by Ms Grace M. Vaye, Chief of Maritime Operations and Quality Management, LiMA. The agenda of the visit is at Annex C.

6. List of contacts

See Annex D.

7. Recommendations

As an outcome of the visit, the team recommends the following actions:

- Establish, under the chairmanship of LiMA and through an appropriate national regulation (Executive Order?), a National Hydrographic Committee whose membership should comprise at least all the organizations represented at the opening session of the visit (see list in paragraph 4.6 above);
- Include in the statutes of the National Hydrographic Committee provisions on the governance of national hydrographic services and the coordination of maritime safety information;
- Formalize the role of the UKHO as the Primary Charting Authority through a bilateral arrangement with LiMA as lead organization;
- Sign the statutes of the Eastern Atlantic Hydrographic Commission to become an Associate Member;
- Formalize an agreement with the NAVAREA II Coordinator to promulgate coastal warnings on SafetyNET;
- Seek the advice of the NAVAREA II Coordinator on the potential contribution of Liberia to the establishment of an international NAVTEX Service between Senegal and Nigeria;

- Organise a review of all the published nautical charts of Liberia as soon as possible and to inform the PCA (UKHO) of all the differences from what is shown on the charts and establish an information flow between the NPA and the UKHO²;
- Regulate survey activities in Liberia maritime zone (territorial water and EEZ) in order to ensure that permission for survey operations are granted subject to the final processed data set being forwarded to Liberia for use by the PCA (UKHO) and strengthening of the national database;
- Establish a national hydrographic data register showing survey areas, survey methods, dates of surveys, originators of the surveys and repositories such that this vital national data can be used to its fullest extent and possibly without the need for expensive resurveys. Within this register should be included all data held at the UKHO archive. The register should be readily available both in Liberia and to the PCA (UKHO) such that uncharted data can be brought into the charting programme;
- Develop a national SDI project underpinned by a streamlined governance;

Liberia is urged to apply for IHO membership in order to benefit fully from the Capacity Building Programme in support of the implementation of these recommendations.

8. Timeline

Liberia is invited to consider the recommendations in paragraph 7 above and implement them in accordance with the following timeline:

- LiMA to collate and aggregate the comments on the draft report from the national stakeholders within a month (14 Mar 2016);
- Technical team to issue the final report within two weeks of the receipt of the comments (28 Mar 2016);
- LiMA to coordinate the implementation of the recommendations and report on the progress through Liberia national report at the 14th EAHC Conference (18-20 Oct 2016, Cadiz, Spain).

² The UKHO produces a Code of Practice giving guidance on the information required and the format in which it should be sent to the UKHO. Paper copies of the Code of Practice were passed to NPA during the visit. A digital copy will be provided to NPA and LiMA post-visit.

References

- [1] 2016/01/20 - <http://www.diplomatie.gouv.fr/fr/dossiers-pays/liberia/>
- [2] 2016/01/20 - <https://en.wikipedia.org/wiki/Liberia>
- [3] 2016/01/20 - <http://atlas.media.mit.edu/en/profile/country/lbr/>
- [4] 2016/01/21 - <https://www.liscr.com/liscr/>
- [5] 2016/01/21 - <http://www.emansion.gov.lr/>
- [6] 2016/01/21 - <http://www.lr.undp.org/content/liberia/en/home/ourwork/library/liberia-agenda-for-transformation.html>
- [7] 2016/01/30 - <http://www.oecd.org/countries/liberia/aid-at-a-glance.htm>
- [8] 2014/03/17 - Fact Sheet - EU Strategy on the Gulf of Guinea - 140317/01
- [9] 2015/03/16 - Council conclusions on the Gulf of Guinea Action Plan 2015-2020 - 7168/15 - COAFR 97 - ACP 42 - PESC 279 - RELEX 221 - JAI 173
- [10] 2016/01/30 - <http://www.liberianobserver.com/development-investment/us15m-greenville-port>
- [11] 2016/02/06 - <http://liberia.africadata.org/>
- [12] 2016/02/06 - <http://www.tgs.com/>
- [13] 2008/02/05 - Voluntary IMO Member State Audit Scheme - Audit of the Republic of Liberia - 26 February – 5 March 2007 - Final Report
- [14] 2014/06/16 - IMO Member State Audit Scheme - Audit schedule for the mandatory Scheme - Note by the Secretary-General – C 112/INF.3

Annex A:
IHO Assessment – Preliminary Information

Introduction

The purpose of an IHO assessment visit is to consider the status of hydrographic services in the country and advise on how the situation can best be improved so the State can meet its international obligations for hydrography and at the same time contribute to safety of life at sea and protection of the marine environment as well as providing long-term improvements in national infrastructure and economic wealth.

The International Convention on the Safety of Life at Sea (SOLAS) places an obligation under international treaty law for all signatory nations, which includes Liberia, to ensure that appropriate hydrographic services are provided. This means that the government of Liberia is responsible for ensuring that:

- Maritime Safety Information (MSI) is promulgated,
- nautical charts and other nautical publications are prepared and available,
- nautical charts and other nautical publications are kept up to date,
- hydrographic surveys are carried out.

The United Nations Convention on the Law of the Sea (UNCLOS) and various Resolutions of the UN General Assembly also recognize the importance of hydrography and commit Member States of the UN to recognize their responsibilities for hydrography.

For further information, consult IHO Publication M-2 - *The need for national hydrographic services* at http://www.iho.int/iho_pubs/misc/M-2_3.0.4_E-JULY2015.pdf

QUESTIONNAIRE

To assist in making the technical assessment visit successful, please return the following information to the IHB, at: info@iho.int - Fax: +377 93 10 81 40
Not later than two months before the visit.

If an answer is not known please insert "NK"
If the question is not applicable, please insert "NA"

Details of the Respondent

Title or rank: Chief Of Maritime Operations

Name: Ms Grace M. Vaye

Organization: Liberia Maritime Authority

Geographical Address: Monrovia, Liberia

Postal Address: Sinkor 21st Street, adjacent JFK Medical Center

P.O. Box: 10-9042, 1000 Monrovia, 10 Liberia

Other contact information (e-mail, fax,etc.): grace.vaye@lima-liberia.com/mommylove84@yahoo.com

Existing Capability

Are the following hydrographic services provided for your country at present (YES/NO/NK)?

If YES, indicate which organization (or third country) is responsible for the service.

If the service is provided through a third country, indicate if the responsibilities are defined in a formal agreement and provide the relevant references if possible.

Maritime Safety Information (MSI)? NO

Nautical paper charts? YES

UK Hydrographic Services

No formal agreement

Electronic Navigational Charts (ENC)? YES

Vessel obtain it through Internet

Tide Tables? YES

Internet

Tides / water level measurement? NO

Hydrographic Surveys? NO

National Port Authority conduct pre-dredge and post dredge survey within the Port limits

But wrecks and obstruction are reported to UK hydrographic services by vessels and Port Authority

Topography Mapping / Cadastral YES

Topographic Surveys YES

Inland Waterways NO

Which (if any) departments in your country have personnel with competencies in:

hydrographic surveying: NO

nautical charting: NO

geospatial data management: YES/ Department of Lands, Survey and Cartography (DLSC)

tides /water level measurement: NO

topographic surveying and mapping; YES/DLSC

digital elevation modelling: NO

aerial and/or satellite image processing and mapping: NO

For each category available in your country, what is the general level of skill of the staff, including qualifications and training history?

geospatial data management: Two (2) employees have been trained in this area and obtained MSc.

topographic surveying and mapping: some employees have been trained abroad and earned higher diplomas in Surveying and GIS

Cartographic/Cadastral: some employees have higher diplomas in Cartography and Cadastral mapping and MSc. Degree in Cadastral Survey Methods.

Is there any equipment / platform (such as ship or aircraft) available in your country for: promulgation of Maritime Safety Information (MSI)? NO

hydrographic surveying? NO

nautical cartography? NO

tidal observations? NO

The Liberian Coast Guard have boats that could be used for the above purpose but the above survey equipment need to be installed. The boats are used for patrol and have basic navigation equipment. Please see the below particulars of the boats.

Numbers of Boats: 4 Defender boats: 2@33ft and 2@27ft³

Equipment onboard each boat

1. AIS Transponder FA-50
2. GPS/VHF combined
3. AIS viewer
4. DGPS
5. ANALOG Video
6. ECO SOUNDER
7. NAVNET
8. RADAR PLOTTER
9. Electronic Chart Plotter
10. VHF/HF Radio
11. Speed/Temperature Sensor
12. Radar- range between 0.125 and 0.25

If applicable and possible, provide details of equipment and software, for example. ships or vessels, echo-sounders; DGPS stations; tide gauges; data acquisition, processing and management software; cartographic / topographic workstations; GIS tools; etc.

Existing Programmes

Is there any awareness at the national level of the status of hydrographic surveys and nautical charting as assessed in IHO Publication C-55 (http://www.iho.int/iho_pubs/CB/C-55/index.html) YES

Are there any national plans in place for developing hydrography and/or management of the coastal zone?

YES

International Cooperation

Are there any bilateral or regional arrangements in place to assist in the provision of national hydrographic services?

NO but the UK Hydrographic Services provide nautical charts on commercial basis and update charts based on information from vessels or port authority that have encounter obstruction that may pose risk to navigation.

³ Two additional Defender boats have been donated recently by the US Government.

Institutional Framework

Who are the mapping and research agencies that you think should be involved in the establishment or improvement of hydrographic capacity in your country (provide addresses, points of contact, phone, fax, e-mail)?

Asst. Minister George Y. Miller

Ministry of Lands, Mines and Energy

Department of Lands, Surveys and Cartography

Tel: +231886435084

Email: georgemiller1956@yahoo.com

In your country, what are the organizational and administrative structures that look after:

maritime transport?

Liberia Maritime Authority

inland waterborne transport?

Liberia Maritime Authority

mapping?

Department of Lands, Surveys & Cartography

Ministry of Lands, Mines and Energy

national development and infrastructure?

Ministry of Finance, Planning and Development, Ministry of Public Works and other relevant stakeholders depending on the specific area of concern.

prevention of marine disasters (storms, coastal floods, etc.)?

Ministry of Internal Affairs

representation at the International Maritime Organization (IMO)?

Liberia Maritime Authority

representation at the Intergovernmental Oceanographic Commission (IOC)?

NOT REPRESENTED

representation at the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)

NOT REPRESENTED

In your country, what are the ministries and other national authorities / administrations / institutions potentially concerned with the provision and use of hydrographic services (provide designation, address, phone, fax, e-mail)?

1. Liberia Maritime Authority

Atty. Charles A. Gono Jr.
Deputy Commissioner
Division of Domestic Vessel Registration and Safety
Email: gblolay@yahoo.com
Tel: 00231886525718/00231777228884

2. National Port Authority/ Marine Services Department

Capt. Armett Hills
Harbour Master
Email: armetth@yahoo.com
Tel: 00231886331864/00231776331864

3. Ministry of Lands Mines and Energy/ Department of Lands, Surveys and Cartography

Asst. Minister George Y. Miller
Ministry of Lands, Mines and Energy
Department of Lands, Surveys and Cartography
Tel: +231886435084
Email: georgemiller1956@yahoo.com

4. Ministry Of Agriculture/ Bureau Of National Fisheries

William Y. Boeh
Coordinator
Bureau Of National Fisheries
Ministry Of Agriculture
1000 Monrovia 10, Liberia
E-mail Address: williamyboeh@gmail.com
Tel : +231-888198006

5. National Oil Company of Liberia

Mr. Rufus Tarnue
Vice President for Technical Services
Tel:
Email: rtarnue@nocal.com.lr

6. Ministry Of internal Affairs

7. Ministry of National Defence

Lt. Cdr. Cephas T. Gboe
Commander
Liberia National Coast Guard
Armed Forces of Liberia
CELL: + 231 (0) 770661733
+ 231 (0) 886583951
+ 231 (0) 776129865
EMAIL: gbocephas@yahoo.com
travis3gboe@gmail.com

8. Environmental Protection Agency

Anyaa Vohiri, MA J.D
Executive Director/CEO
Tel: 00231770514013/886514013
Email:vohiri@yahoo.com

What do you think is the level of awareness and priority in government and at the higher levels of the administration regarding the importance and value of hydrography to the country?

The level of awareness and priority is very high as Liberia is a flag, port and coastal state. To meet her obligations as outlined in the IMO Implementation Instrument (III) code and SOLAS Convention as amended, Liberia needs to provide hydrographic services and aids to navigation in order to ensure safety of navigation, protection of marine environment and safety of life within Liberia's navigable waters. There's also oil exploration currently ongoing, boundary delimitation, coastal defence program to protect coastal communities from sea erosion, national disaster management plan and oil spill response contingency plan also being drafted. All the above cannot be met if the state of the sea is unknown, the condition of the seabed remain unknown and the sea is not continuously being monitored or the composition of what lies beneath the sea level remained unknown.

Please describe the nature of any interagency cooperation with regard to hydrography, as you understand it.

There are interagency cooperation as the National Port Authority and National Oil Company of Liberia collaborate with the Department of Lands, Survey and Cartography (DLSC) as regard to gathering information on the topography of the coastlines and hydrographic information of the coastlines and ports. The DLSC provide hydrography information of Liberia's jurisdictional waters to each entity that request it or any third party that has been hired by any government agency to collect geophysical data or hydrographic information. The Liberian National coast guard boats are also available when timely requested.

In your opinion, who should be, or is, designated by the government as responsible for the proper provision of hydrographic service in your country (position, address, phone, fax, e-mail)?

The Ministry of Lands, Mines and Energy (MLME) is designated by the Government of Liberia to conduct hydrographic survey. However, in contemporary time hydrographic services are mostly used by maritime transport and have become very important part of the provision of maritime safety information. It is based on these information that nautical charts are being developed and continuously updated.

The Liberia Maritime Authority (LiMA) is also designated by the Government of Liberia to represent her at IMO and acts as the competent authority for implementation and enforcement of Liberia Maritime Laws and applicable IMO instruments. LiMA has the oversight responsibility to govern all matters pertaining to Liberia Maritime domain in collaboration with other relevant stakeholders to ensure safety of life at sea, safety of navigation, protection of marine environment and securing Liberia's jurisdictional waters while the National Port Authority has the responsibility to manage and operates all public commercial ports. Additionally, the Liberia National Coast Guard has the oversight responsibility to enforce all Laws of Liberia within the Liberian Jurisdictional waters. .

Therefore, in my opinion; Liberia Maritime Authority in collaboration with the National Port Authority, Liberia National Coast Guard and MLME will be the appropriate authorities to provide and manage hydrographic services in Liberia. Like many other countries, Hydrographic services are provided by the maritime administration or the coast guard.

**Annex B:
Charting Analysis of Liberian Waters**

1. Liberian Chart Coverage

Liberia does not have a chart production capability and relies historically on the UKHO to fulfil this function. The résumé of chart coverage for Liberia shown in IHO Publication C55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide* (updated 01 May 2004) is shown in the table below. The figures in brackets show revised values as supplied by UKHO for this report.

Chart Type	% Covered by INT Charts	% Covered by RNCs	% Covered by ENC's
Small Scale: Offshore Passage	100 (100)	100 (100)	100 (100)
Medium Scale: Landfall, Coastal Passage	100 (33)	100 (100)	0 (100)
Large Scale: Approaches and Ports	100 (0)	100 (100)	0 (25)

IHO C55 Status of Chart Coverage

2. British Admiralty Charts

For historical reasons the United Kingdom, through the United Kingdom Hydrographic Office (UKHO) remains the Primary Charting Authority (PCA) for Liberia. All UKHO charts covering Liberia are referred to WGS 84, however, the data from which the charts are compiled is noted as being in many cases old and imperfect.

The published charts and current state of maintenance is shown in the table below.

BA Chart	Title	Year of Chart Publication (Last NtoM/Year)	Annual Sales FY 14/15
1362	Harper to Sassandra (1:300 000)	Ed 1, 19 June 1992 491/13	520
1363	Cape Saint Ann to Monrovia (1:300 000)	Ed 1, 28 June 1991 5512/2012	499
1364	Monrovia to Greenville (1:300 000)	Ed 1, 5 Mar 1993 5018/15	504
1365	Greenville to Harper (1:300 000)	Ed 1, 5 Mar 1993 2807/10	506
1980	Greenville and Harper with Approaches Approaches to Harper (1:75 000) Harper (1:12 500) Approaches to Greenville (1:100 000) Greenville (1:25 000)	Ed 2, 30 Sept 2004 3576/13	76
2478	Approaches to Monrovia Approaches to Monrovia (1:120 000)	Ed 2, 29 Apr 2004 3465/13	244

BA Chart	Title	Year of Chart Publication (Last NtoM/Year)	Annual Sales FY 14/15
	Monrovia (1:25 000)		
3139	Monrovia to Sassandra (1:1 000 000) INT 2086 (SHOM)	Ed 1, 8 Apr 1994 5512/2012	1,036
1147	Cabo Roxo to Monrovia (1:1 000 000) INT 1085 (SHOM)	Ed 1, 28 Apr 1995 5093/15	1,043
3648	Approaches to Buchanan Approaches to Buchanan (1:100 000) Buchanan (1:25 000)	Ed 2, 19 Aug 2004 5018/15	167

Summary of UKHO Charting

3. ENC's

There are 8 ENC's produced by UK and France covering Liberian waters.

ENC	Title	Compilation Scale	Edition	Corrected to
FR271850	Cabo Roxo to Monrovia	1:700 000	1.000	14/12/2015
FR223030	Monrovia to Sassandra	1:1 001 850	1.005	12/03/2015
GB301363	Argyle Pt to Cape Mount Bay	1:180 000	3.000	28/06/2012
GB301364	Bassa Point to Greenville	1:180 000	4.001	25/09/2015
GB301365	Off the Coast of Greenville	1:180 000	1.001	05/10/2011
FR373840	Greenville to San Pedro	1:350 000	1.000	16/11/2015
GB302478	Approaches to Monrovia	1:90 000	2.005	29/07/2013
GB402478	Monrovia	1:22 000	4.001	02/12/2013

Summary of ENC's

**Annex C:
Agenda for the IHO Visit**

**IHO Technical Visit to Liberia
Need Assessment of Hydrographic services
Feb 3-5, 2016**

DAY 1: Wednesday 3, February 2016: General presentation and Meetings

Time	Activities	Participating Stakeholder(s)	Assessor/Speaker
8:30-9:00	Arrival and Registration of Participants		
9:30-9:35	Opening Remark	ALL	Binyah C. Keselly COMMISSIONER
9:40-10:00	Delegate's Remark	ALL	Head of IHO Technical Team
10:00-10:30	Group Photo Session		
10:30-11:30	General Presentation of the current arrangements of hydrographic services in Liberia	ALL	LiMA
11:30-11:45	Presentation of Regional MRCC	LiMA LNCG	Technical Team
12:00 -13:00	Lunch		
13:30-14:00	Meeting : Public Port Owner/Operator	National Port Authority Arcelor Mittal	IHO Technical Team
14:30-15:00	Meeting: Public Port Owner/Operator	National Port Authority APM Terminals	IHO Technical Team

DAY 2: Thursday 4, February 2016: MEETINGS CONTINUE

Time	Activities	Participating Stakeholder(s)	Assessor/Speaker
8:30-9:30	Meeting : Courtesy Visit	British Embassy	IHO Technical Team
9:50-10:20	Meeting : Sensitivity Mapping and Environmental concerns	EPA	IHO Technical Team
10:40-11:10	Meeting: Disaster Management	MIA	IHO Technical Team
11:30-12:00	Meeting: Infrastructure development including pier, jetty, bridges....	MOPW	IHO Technical Team
12:20-12:50	Meeting : National Development and Planning	MOF/Planning	IHO Technical Team
12:50-13:50	Lunch		
14:00-15:00	Meeting : UNCLOS issues	MOFA	IHO Technical Team
15:30-16:00	Meeting: construction of fishing Pier	MOA/BNF	IHO Technical Team
16:30-17:30	Meeting: Courtesy visit	French Embassy	IHO Technical Team

DAY 3: Friday 5, February 2016: MEETINGS and closing discussion

Time	Activities	Participating Stakeholder(s)	Assessor/Speaker
8:00-8:30	Meeting : seismic and baseline survey	NOCAL	IHO Technical Team
9:00-9:30	Meeting: Geo-information services	LISGIS	IHO Technical Team
10:00-10:30	Meeting : Maritime Laws Enforcement	MOD/LNCG	IHO Technical Team
11:15-12:00	Meeting: Maritime sector regulator and provision of maritime safety services	LiMA	IHO Technical Team
12:45-13:15	Meeting: Hydrography survey, cartography, coastal defence	MLME/DLSC	IHO Technical Team
14:00-14:15	Meeting: Planning and development of national transportation systems	MOT	IHO Technical Team
15:00-15:30	Lunch		
15:30-16:30	Closing Meeting	All	IHO Technical Team

**Annex D:
List of Contacts**

Note: the contacts in italics were not met during the visit

Family Name Given Name	Responsibility	Contact information	Comments
Ministry of Agriculture			
Boeh William Y.	Coordinator Bureau of National Fisheries	williamyboeh@gmail.com +231 770 251 983 +231 888 198 006	
Daryoue Solomon	Fisheries Environmental Officer	daryoue@gmail.com +231 777 660 069	
Kumeh Joyce W.	Coastal Resource Officer	joycekumeh@gmail.com +231 886 593 682	
Ministry of Finance & Development Planning			
Jeffy William S.	Assistant Director	wjeffyemfdp.gov.lr +231 886 549 343	
Dahn, Sr Darlington D.W.	Planning Analyst	wonsehleay.1985@gmail.com ddahnemfdp.gov.lr +231 770 764 957 +231 886 764 957	
Muchiri Rose	Project Management Specialist	rose.muchiri@undp.org +231 770 003 833 +231 880 421 642	
Ministry of Foreign Affairs			
Zuo Dehpue Y.	Acting Vice Minister for Multilateral Affairs	dehpue.zuo@mofa.gov.lr +231 886 749 530	
Lah-Adile Evelyn	Assistant Minister for Legal Affairs	evelynlah58@gmail.com +231 777 836 869	
Kontoe Dave B.	Senior Desk Officer	kondave23@gmail.com +231 886 577 492	
Ministry of Internal Affairs			
Kollie Gbemie Horace	Deputy Minister for Operations	+231 886 552 972	
Gbileh Fairnoh T.	Technical Assistant National Disaster Relief Commission	+231 886 598 023	
Kollie Augustine M.	Technical Consultant	+231 886 553 459	
Nagbe Madison T		+231 777 038 336	
Ministry of Lands, Mines and Energy			
<i>Miller George Y.</i>	<i>Assistant Minister for Lands, Survey and Cartography</i>	<i>georgemiller1956@yahoo.com +231 886 435 084</i>	
Wylie Jefferson W.	Director Liberian Hydrological Service	jeffersonw.wylie@yahoo.com +231 886 815 802	
Cisco, Sr Nathaniel K.	Director Liberian Cartographic Service	revnatcisco@yahoo.com +231 886 554 958	
Ministry of National Defence			
Grandoe Marie H.	Assistant Minister for Coast Guard Affairs		
Minikon			

Family Name Given Name	Responsibility	Contact information	Comments
<i>Gboe Cephas T.</i>	<i>Lt Cdr Commander Liberia National Coast Guard</i>	<i>gbocephas@yahoo.com travis3gboe@gmail.com +231 770 661 733 +231 776 129 865 +231 886 583 951</i>	
Kamara Stephen Y.	Ensign Liberia National Coast Guard	+231 880722 644	
Ministry of Public Works			
Jackson II Johnny W.	Director Monitoring and Evaluation	john.jack.jwji@gmail.com jwinjackso@yahoo.com +231 880 434 668	
Fredericks Clarence	Chief Engineer	cfred1986@gmail.com +231 770 173 070	
Ministry of Transport			
Gongar D. Erasmus	Director for Planning, Policy and Project	derasmusgongar@yahoo.com +231 770 228 212 +231 886 105 963	
Tarplah Gabriel S.	Technical Assistant	gtarplah2000@gmail.com +231 886 524 507	
Liberia Maritime Authority			
Kesselly Binyah C.	Commissioner and Chief Executive Officer	binyah.kesselly@gmail.com binyah.kesselly@yahoo.com	
Gono Jr. Charles A.	Deputy Commissioner Division of Domestic Vessel Registration and Safety	gblolay@yahoo.com +231 777 228 884 +231 886 525 718	Participant in the 2- weeks Regional Training Course on Hydrographic Survey and Introduction to Chart production funded by IMO and held in Ghana in April 2011.
Dennis Wessa B.	Director Human Resources Development	wessadennis@yahoo.com +231 886 511 406	
Lynch Samuel M.	Director of Maritime Security Chief ISPS Compliance Officer	elcapitan90@yahoo.com +231 777 666 658 +231 886 399 044	Participant in the IMO- IHO-IALA Regional Seminar on Safety of Navigation held in Ghana in April 2014.
Gbaintor, Esq. Nya S.	Director of Administration	nya.gbaintor@lima-liberia.com nyagbaintor@gmail.com +231 777 290 377 +231 886 399 007	
Tarr Daniel	Associate Director for Marine Environmental Protection	+231 886 562 227	
Vaye Grace Maweaha	Chief of Maritime Operations and Quality Management	mommylove84@yahoo.com +231 777 430 327 +231 888 653 643	Coordinator of the visit

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