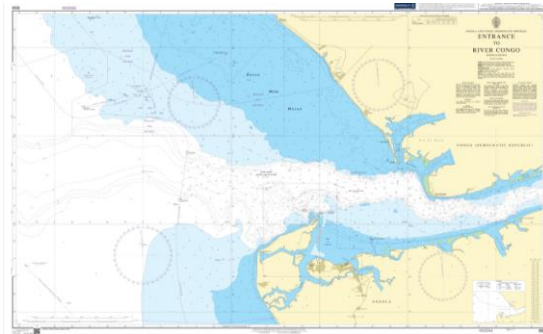
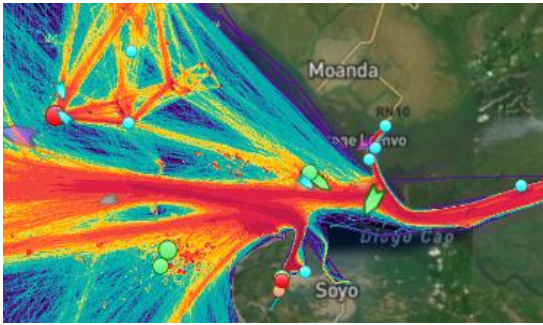
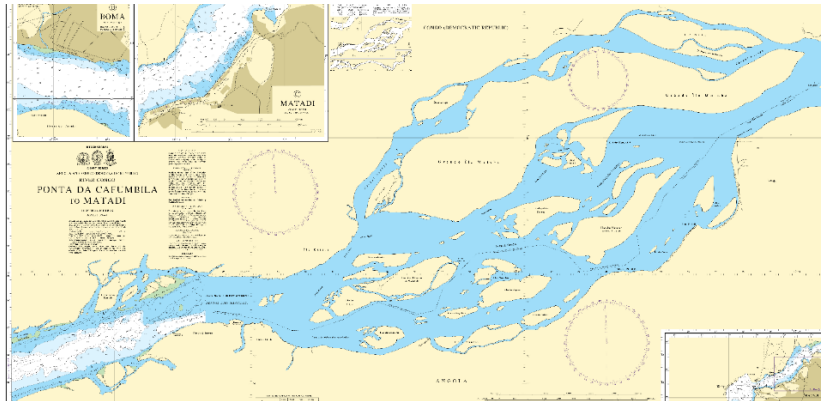




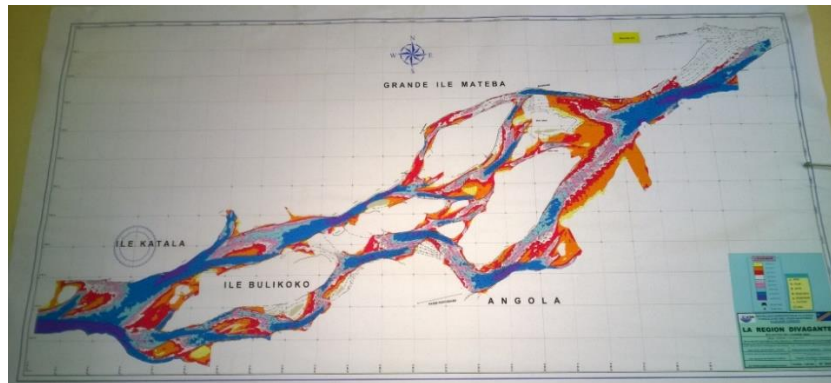
**IHO - Capacity Building
Work Programme
Technical Visit in Democratic
Republic of Congo
REPORT
25 January- 08 February 2024**



Bief maritime :

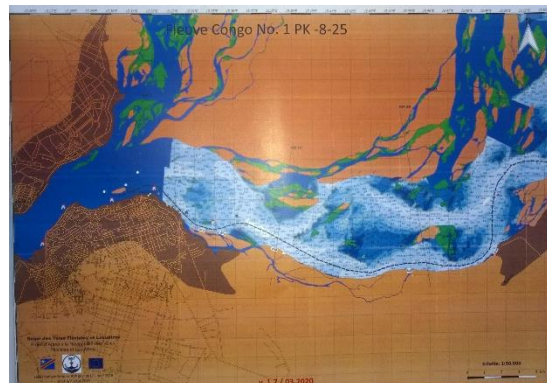
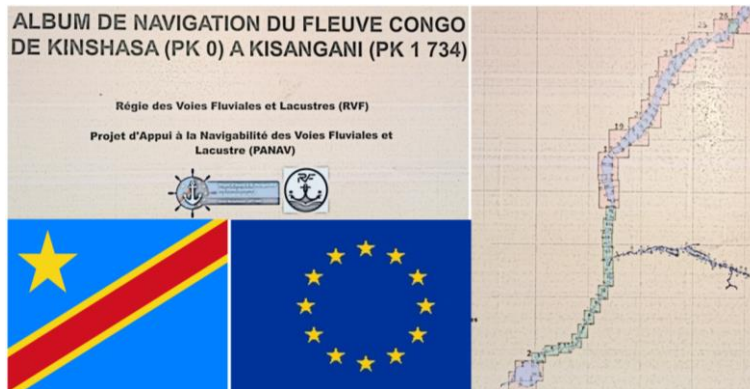


UKHO: United Kingdom Hydrographic Office Chart N° 657



CVM : Congolaise des Voies Maritimes

Bief moyen (Congo River) :



RVF : Régie des Voies Fluviales

Our thanks to :

Main actors of the Technical Visit:



**MINISTÈRE
DES TRANSPORTS,
VOIES DE COMMUNICATION
ET DE DESENCLAVEMENT**

- Ministère
- Secretariat Général
- Direction de la Marine et des Voies navigables



**Congolaise des Voies
Maritimes**



**Régie des Voies
Fluviales**

Others stakeholders :



Force Navale



**Institut Géographique du
Congo (IGC)**



**Direction des Ressources en
Eau (DRE)**



Office National des Transports



**Office de Gestion du Fret
Multimodal**



Lignes Maritimes Congolaises

With the participation of:



**Délégation de l'Union
Européenne**



**Japan International
Cooperation Agency**

With the help of:



**Service hydrographique
et océanographique de
la marine (France)**



**UK Hydrographic
Office**

**Hydrographic Office
(United Kingdom)**



**Secrétariat de l'OHI
(Monaco)**

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ABSTRACT

The Democratic Republic of Congo (DRC) surprised the IHO representative.

It is fundamental to consider both the challenges of:

- Maritime navigation from the Atlantic Ocean to the inland port of Matadi located 150 km from the mouth of the Congo River (bief maritime, the DRC's only route of communication with the oceans). An average of 585 ships per year;
- River navigation on the Congo River itself and its tributaries (Oubangui, Sangha, Kasai) on more than 25,000 km of waterways for more than 15,000 vessels in the broad sense (boats, barges, pushers, tugs, etc.). There is no multimodal transport project in the Congo Basin that does not include a river component.

The challenges, in addition to navigation safety, are economic and environmental. The economic gains from safer and faster navigation thanks to better hydrographic knowledge and digital cartography made easily available to all users are considerable.

Obviously far from claiming to have seen and understood everything. Despite everything, the duration of the Technical Visit (TV) increased to 14 days and the constitution of a permanent visiting team composed of the representative of the IHO and two Congolese executives strongly involved in navigation and relations with the OHI has made it possible to identify findings and recommendations which now deserve to be further explored and followed up.

The baton has passed to the IHO contact points in the DRC. It is now necessary to plan the actions which, during the summary meeting at the end of the TV, have already received the assent of the Secretary General of the "Ministère des Transports, Voies de Communication et de Désenclavement" (MTVCD). Some of them having been exposed at the beginning of the TV to Minister TVCD himself.

From now on, in a roadmap to be written, launch a few such as:

- Propose Congolese candidates to training offered by the IHO;
- Exchange with the British Hydrographic Service (UKHO) so that the "SOLAS" nautical charts are representative of the actual navigation conditions in the "bief maritime";
- Extract targeted recommendations from the report to:
 - Within the DRC itself, promote profitable exchanges between organizations on subjects of common interest.
 - In a regional framework, the CICOS (International Commission of the Congo-Oubangui-Sangha Basin) for Central Africa, Angola, the DRC, Cameroon, Congo and Gabon, see how the IHO can contribute to improving the conditions for the development of hydrography and river cartography.
 - Still at the regional level, it would also be appropriate, this time for the "bief maritime" shared between the DRC and Angola, to take up the cooperation proposal offered by Angola.
- Complete the discussions that had been planned with international development agencies. The meetings that took place with the delegation of the European Union (EU) and the Japan International Cooperation Agency (JICA) should already be followed by Congolese constructed proposals.
- Finally, put the user at the center of the system, everything must contribute to meeting their needs for safe and economical navigation. Digital solutions are known.

Lots of good surprises, now, like everywhere else, good margins for progress and inexpensive innovations in terms of immediate return on investments.

MAIN COMMENTS, RECOMMENDATIONS: addition to the previous summary

Object	Actions: for MTVCD mainly linked to the DMVN, the RVF and the CVM
<p>Propose Congolese candidates for training offered by the IHO in hydrography and marine cartography</p>	<p>Consult the IHO Circular Letters regularly at: https://iho.int/en/circular-letters. In particular those already distributed:</p> <ul style="list-style-type: none"> • in 2023 (for memory) : <ul style="list-style-type: none"> ○ CL44 (19 February 2024) : Category "B" Hydrographic Survey Programme Sponsored by the Republic of Korea (17 June to 1 November 2024) - Call for Applications. Registration Limit 19 February 2024) • in 2024: <ul style="list-style-type: none"> • CL03 : Call for applications for training under the IHO - Nippon Foundation Geospatial Marine Analysis and Cartography (GEOMAC) Project, UKHO, Taunton, UK • CL05 : Master of Science Programme in Hydrographic Science at the University of Southern Mississippi (USA) Sponsored by the Republic of Korea – Selection of candidates (12th Course, 11 August 2024 to 6 August 2025) • To come: <ul style="list-style-type: none"> ○ Category “B” Nautical Cartographers Programme, sponsored by the Republic of Korea ○ HO-IOC-Nippon Foundation / GEBCO Training Project. <p>In the event of an absence of candidates with the prerequisites (maths, physics, English if applicable) or a registration limit, please note that these are recurring training programs to position yourself for the following year.</p> <p>The IHO approved training courses to be followed are:</p> <ul style="list-style-type: none"> • CAT B Hydrography : senior hydrography technicians in hydrography • CAT B Nautical Cartography : senior hydrography technicians in nautical cartography • CAT A Hydrography : engineer in hydrography
<p>Communicate with the British Hydrographic Office (UKHO: United Kingdom</p>	<p>This concerns navigation in the bief maritime.</p>

<p>Hydrographic Office) so that the “SOLAS” nautical charts are representative of real navigation conditions. Towards a Congo-British co-production</p>	<p>Annex D indicates the “UKHO” contact points: Mr Nathanael Knapp and Nicholas (Nick) Swadling</p> <p>Exchanges must be able to be conducted in both directions:</p> <ul style="list-style-type: none"> • From the DRC (CVM: Congolaise de Voies Maritimes in Boma) → UKHO: sending data (port surveys, new infrastructure, surveys in the estuary and offshore, permanent beaconing, etc.), metadata (quality) and information of a nature to update British nautical charts and sailing directions. • From UKHO → CVM: sharing of methods on cartographic processes <p>Note: It is fundamental that Congo DR archives and can disseminate (national database, Internet portal, etc.) all the data previously cited in a lasting manner for shared valorization (multiple-use databases: navigation, hydrology/oceanography, environment , research ...)</p>
<p>Within the DRC itself, promote profitable organizational and technical exchanges between organizations on subjects of common interest.</p>	<p>Shared actions have already been presented to interested stakeholders, in particular during the TV restitution meeting.</p> <p>For example:</p> <ul style="list-style-type: none"> • To stimulate hydrographic (survey methodology) and cartographic (production of digital charts for electronic visualization systems) exchanges between the CVM and the RVF • To share know-how in geomatics remote sensing. To the CVM and the RVF which practice it we must here add: IGC (Congo Geographic Institute), CNT (National Remote Sensing Center not encountered during the VT), METTELSAT (National Agency for Meteorology and Satellite Remote Sensing) • To stimulate scientific research, particularly in hydrology or oceanography. The RVF and the CVM provide their data to scientific or university organizations. For the middle and upper “bief”, CICOS (already involved in GMES: Global Monitoring for Environment and Security and Africa) can undoubtedly initiate, or even coordinate, scientific projects without which it will not be possible to “push up” technicality hydrographic operational methods <p>The IHO advises relying on a “National Hydrographic Committee” for coordination. This could be based on existing structures and have another name encompassing Congolese stakeholders, without too much differentiating fluvial and maritime (reference: https://iho.int/en/miscellaneous-publications: “M2 The Need for National Hydrographic Services”). This will involve all institutional and</p>

	operational stakeholders being able to efficiently share issues, projects, human and material resources and finally results for socio-economic purposes.
<p>• In a regional framework, the CICOS (International Commission of the Congo-Oubangui-Sangha Basin) for Central Africa, Angola, the DRC, Cameroon, Congo and Gabon, see how the IHO can contribute to improving the conditions for the development of hydrography and river cartography.</p>	<p>This is a desire expressed by many countries in the region (not just the sea: the rivers and lakes). It is recommended that IHO member countries express, within its bodies, their specific needs so that users can be offered services comparable to those offered at sea.</p> <p>This could be done:</p> <ul style="list-style-type: none"> • On the one hand within the EAtHC (or even SAIHC for the Great Lakes region) • On the other hand within the IHO as a whole in order to bring together countries with comparable river and lake issues (Niger, Amazon, Mekong, etc.)
<p>Still at the regional level, it would also be appropriate, this time for the bief maritime shared between the DRC and Angola, to seize the cooperation proposal offered by Angola</p>	<p>Reference : Email¹ « IHO Technical Visit in Democratic Republic of Congo – Regional Hydrography and Cartography cooperation in the Congo River Estuary with ANGOLA” 31 Janvier 2024 Eng.º Hélder Rufino da Conceição - DIRECTOR DE HIDROGRAFIA, OCEANOGRAFIA E INVESTIGAÇÃO CIENTÍFICA AGÊNCIA MARÍTIMA NACIONAL – AMN email: helderufino46.hr@gmail.com;TLM:+244 945 123625;</p> <p>The cooperation opportunity was offered by the National Maritime Agency of Angola (Director of Hydrography, Oceanography and Scientific Research). Concretely, this involves collaborating for access (cabotage) to the Angolan port of Noqui located near Matadi (DRC).</p> <p>Currently, commercial navigation in the bief maritime is almost exclusively carried out for the DRC. Such cooperation would allow sharing of hydrography and cartography tasks and therefore substantial savings. Or with constant resources superior services like this night navigation objective. It would be appropriate for Congo DR and Angola to meet on this subject. Two hydrographic commissions are involved in this: the EAtHC and the SAIHC.</p>

¹ Extract: “We know that the DRC makes extensive use of this region to transport goods to its ports. However, we are concerned about aspects related to cartography, hydrography, navigation aids and dredging, due to Angola's projects to requalify the Port of Noqui and extend the cabotage project there. Therefore, we consider your visit extremely important and we believe that Angola and DRC should collaborate to update the hydrographic cartography of this region, thus guaranteeing navigation safety.

<p>Complete the discussions that had been planned with international development agencies. The meetings that took place with the delegation of the European Union (EU) and the Japan International Cooperation Agency (JICA) should already be followed by Congolese constructed proposals.</p>	<p>Two institutions were met: the European Union (EU) and the Japan International Cooperation Agency (JICA). The Korea International Cooperation Agency (KOICA) Agency could only be met informally. It is now appropriate, with the support of this report:</p> <ul style="list-style-type: none"> • On the one hand, to explore the possibilities that the two institutions we met could offer. This involves structuring proposals for requests for participation in development projects that meet both the needs of the country (e.g. the reduction of accidents and the costs of maritime transport) and the strategies of the agencies (e.g. the promotion of 'a mode of transport that best meets environmental criteria, poverty reduction) • To complete the meetings that had been suggested before the TV. In addition to the EU and JICA: KOICA, Afd, Enabel, GIZ... <p>In terms of development aid, it is important to be familiar with the different channels, in particular:</p> <ul style="list-style-type: none"> • the international hydrographic community: for example the training offers from IHO member countries including particular support from Japan and Korea; • international development agencies mentioned above; • diplomatic channels (Ministers / Ambassadors).
<p>Finally, put the user at the center of the system: everything must contribute to meeting their needs for safe and economical navigation. The solutions are known.</p>	<p>The development of hydrography (continuous updating of the bathymetry of waterways) and marine cartography (distribution of up-to-date charts which must reach users) is an essential imperative. The necessary investment (it appears to be lacking in terms of operation budget) will be inexpensive compared to the considerable gains expected in terms of navigation efficiency. We must complete the projects launched by relying on new mature digital technologies; perseverance can only pay off even if there is an economic-social context to consider in parallel.</p>

OTHER COMMENTS

Object	Comments – Recommendations																				
Maritime Safety Information at Sea (MSI)	<ul style="list-style-type: none"> The CVM issues notices to local navigators (bief maritime); Concerning the open sea and access to the estuary, navigators must also receive maritime safety information. This requires the collection of information (all actors combined: naval forces, shipping companies, oil companies, fishing, CVM, etc.) and its dissemination via NAVAREA II. This could be organized by an instruction of interministerial scope relating to the modalities of the collection and dissemination (urgent, rapid, deferred) of nautical information (MSI: Maritime Safety Information) <div data-bbox="806 534 1691 1077" style="text-align: center;"> <p>La RDC est dans la zone NAVAREA II: France Shom</p> <p>Website: http://diffusion.shom.fr/navarea-en-vigueur</p> <p>L'ANGOLA est dans la zone VII: South Africa Sanho</p> <p>Website: http://www.sanho.co.za</p> <table border="1" data-bbox="846 582 1518 651"> <thead> <tr> <th>PAYS</th> <th>INSTITUTION</th> <th>TELEPHONE</th> <th>FAX</th> <th>EMAIL</th> </tr> </thead> <tbody> <tr> <td>France</td> <td>Shom Service hydrographique et océanographique de la marine</td> <td>+33 2 56 31 24 24 24 +33 6 24 80 08 92 (spare)</td> <td>+33 2 56 31 24 84</td> <td>coord.navarea2@shom.fr coord.navarea2@gmail.com (spare)</td> </tr> </tbody> </table> <table border="1" data-bbox="846 1013 1444 1066"> <thead> <tr> <th>COUNTRY</th> <th>INSTITUTION</th> <th>TELEPHONE</th> <th>FACSIMILE</th> <th>EMAIL</th> </tr> </thead> <tbody> <tr> <td>South Africa</td> <td>South African Navy Hydrographic Office</td> <td>+27 217872445 +27 217872408</td> <td>+27 217872233</td> <td>hydrosan@iafrica.com</td> </tr> </tbody> </table> </div>	PAYS	INSTITUTION	TELEPHONE	FAX	EMAIL	France	Shom Service hydrographique et océanographique de la marine	+33 2 56 31 24 24 24 +33 6 24 80 08 92 (spare)	+33 2 56 31 24 84	coord.navarea2@shom.fr coord.navarea2@gmail.com (spare)	COUNTRY	INSTITUTION	TELEPHONE	FACSIMILE	EMAIL	South Africa	South African Navy Hydrographic Office	+27 217872445 +27 217872408	+27 217872233	hydrosan@iafrica.com
PAYS	INSTITUTION	TELEPHONE	FAX	EMAIL																	
France	Shom Service hydrographique et océanographique de la marine	+33 2 56 31 24 24 24 +33 6 24 80 08 92 (spare)	+33 2 56 31 24 84	coord.navarea2@shom.fr coord.navarea2@gmail.com (spare)																	
COUNTRY	INSTITUTION	TELEPHONE	FACSIMILE	EMAIL																	
South Africa	South African Navy Hydrographic Office	+27 217872445 +27 217872408	+27 217872233	hydrosan@iafrica.com																	
	<p>Explanation: Maritime Safety Information (MSI), as defined in International Maritime Organization Resolution A.705(17) and detailed in the joint IHO/IMO/WMO Manual on MSI (IHO Special Publication S-53), consists of the collection and dissemination of navigational and weather warnings, search and rescue information and other urgent safety-related information, including nautical relating to nautical documentation. The dissemination of these MSI is based on the global maritime distress and safety system (GMDSS: Global Maritime Distress and Safety System), an international system which uses telecommunications means for search and rescue at sea. (SAR) and the prevention of maritime accidents.</p>																				

	In addition, MSI in their broadest sense includes updating navigation charts and other nautical publications (lights, radio signal books, nautical instructions, etc.). The MSIs need an organization (procedures for collecting, transcribing and transmitting information, maintained equipment, trained staff) with a national MSI coordinator in contact with the navigators, the de facto charting manager (UKHO) and NAVAREA II (Shom).
Involvement of the Regional Hydrographic Commission (EAtHC)	<p>Be present at the regional level</p> <ul style="list-style-type: none"> • Participate in the next EAtHC (18th) plenary in 2024 which will take place in Morocco next May • https://iho.int/en/eastern-atlantic-hydrographic-commission • In particular participate in the hydrographic seminar which will precede <p>Note: Congo DR must better communicate on the activities of the RVF and the CVM</p>

Summary of national hydrographic capacity assessment - Table

IHO	EAtHC	NHC	Phase 1 : Capacity MSI	Phase 2 : Capacity Surveys	Phase 3 : Capacity Charting
YES	YES	NO (1)	YES /NO (2)	YES (3)	YES /NO (4)

(1) National Hydrographic Committee (coordination role and national decision).

(2) Maritime Safety Information. YES at the local level for the bief maritime. NO for the open sea beyond territorial waters. It therefore remains to put in place an organization to operationalize exchanges with NAVAREA II (France/Shom) and the current producer of charts “SOLAS” for updates (UKHO)

(3) Hydro-oceanographic surveys through data acquisition and archiving.

(4) NO for Charting to “SOLAS” standards



Boma: Singini buoy boat going up the Congo River in the “bief maritime” , boats waiting at anchor

INTRODUCTION

1 Preparation of the technical visit

The visit was planned as part of the IHO capacity development activity program for the year 2024:

- CBWP 2024: action A-01 - “Technical Visit to Democratic Republic of Congo”.

It was initiated in close collaboration with the Congolese participants cited below. The terms of reference for the visit are set out in Appendix B.

2 Composition de l'équipe

The visiting team, during the two weeks, was composed of:

<u>Name</u>	<u>Role</u>
Henri DOLOU	Project manager at Shom (Hydrographic and Oceanographic Service– France) for capacity development in Africa (France on behalf of the IHO)
Marc BAZONGA BAZA	Head of Provincial Division (Kongo Central including the beif maritime) of Transport, Communication Routes and Opening Up (MTVCD) and “IHO” focal point (MTVCD)
Patrick MUSITUMBU ITAKALA	Inspector at the Maritime, River and Lake pool of the MTVCD IHO focal point of the Transport Administration in Kinshasa. Former Head of Infrastructure and Hydro-port works and also “IHO” focal point (MTVCD)



The Technical Visit team aboard the *Singini* of the Congolaise des Voies Maritimes (CVM) departing from the port of Matadi towards the ports of Boma and Banana

From left to right: MM Patrick, Henri, Marc

PART A – OVERALL ASSESSMENT OF THE SITUATION IN THE REGION

3 Effectiveness of the Technical visit

Monitoring actions resulting from written recommendations will make it possible to measure the real effectiveness of the visit in the long term. A progress update (based on a roadmap to be drawn up by the DRC) will be made at the next EAtHC meeting in 2024 (Casablanca). It can already be said:

- That it could have been prepared in advance of the trip through exchanges and analyzes of existing reports and texts;
- That the issues of hydrography, oceanography (hydrology for the river) and cartography could be addressed both in terms of navigation and economics;
- That the following appointments (Kinshasa, Boma, Matadi) could be honored (chronological order), Appendix E specifies the main authorities met):

Kinshasa

1. MTVCD/DMVN [Ministère des Transports, Voies de Communication et de Désenclavement/ Direction de la Marine et des Voies Navigables]
2. MTVCD/SG [Secrétaire Général]
3. MTVCD/MINISTRY (+ Directeur de cabinet et Conseiller maritime et fluvial)
4. Introductory meeting of “stakeholders” at MTVCD/SG in the presence of:
 - MTVCD/SG par intérim
 - MEDD/DRE [Ministère de l’Environnement et de Développement Durable/ Direction des Ressources en Eaux]
 - OGEFREM [Office de Gestion du Fret Multimodal]
 - LMC [Ligne Maritime Congolaise]
 - ONATRA [Office National des Transports]
 - RVF [Régie des Voies Fluviales]
 - CVM [Congolaise des Voies Maritimes]
 - FORCE NAVALE
 - DMVN
 - IGC [Institut Géographique du Congo]
5. RVF
 - Direction
 - CTD [Centre de Traitement des Données] [Data Processing Center]
 - Navigation in the Malebo Pool (Congo river) aboard the *Lomela*

Matadi – Boma – Banana

6. Travel by sea from Matadi to Banana via Boma. On board CVM *Singini*
7. CVM
8. Provincial Division TVCD in Matadi

Kinshasa

9. IGC
10. CICOS [Commission Internationale du bassin Congo Oubangui Sangha]
11. Délégation de l’Union Européenne [UE] en RDC
12. Japan International Cooperation Agency [JICA]

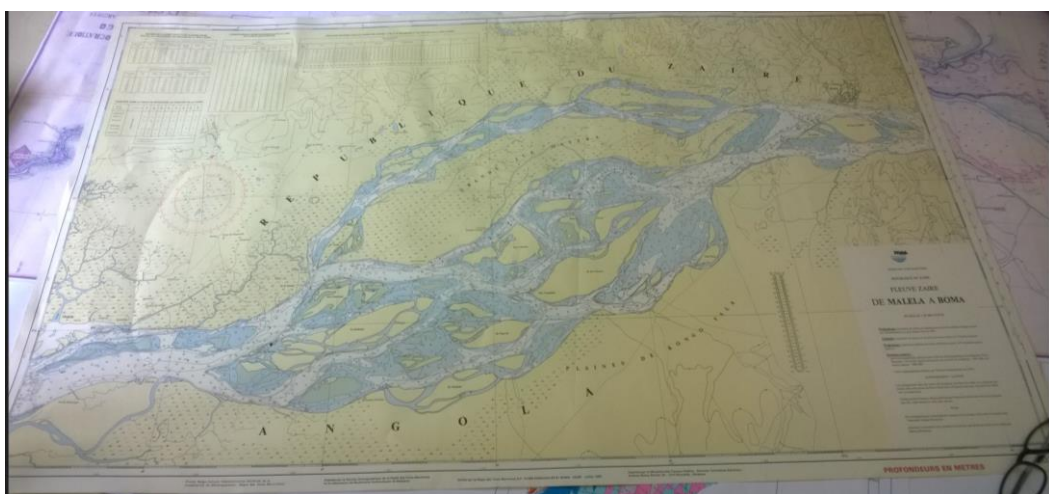
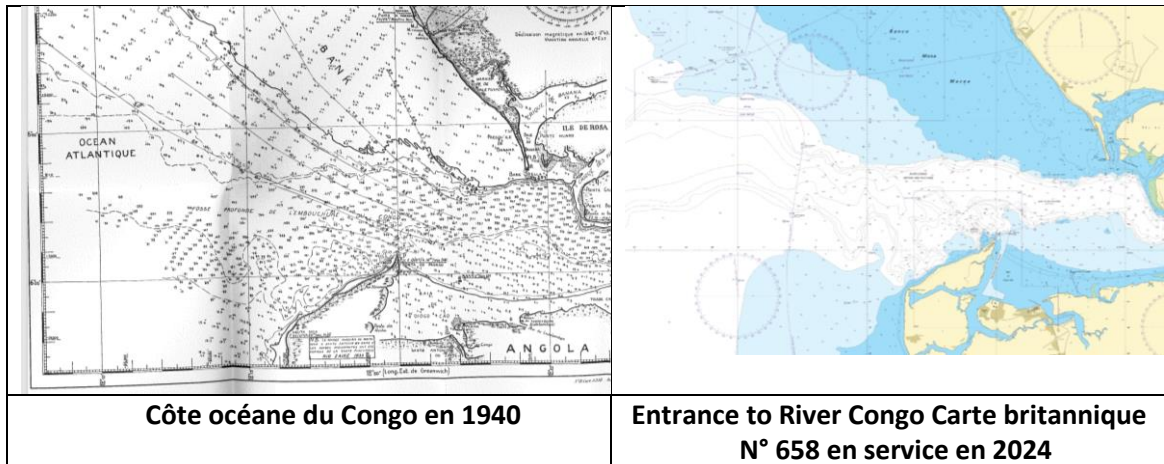
13. Meeting chaired by Mr. The Secretary General of the MTVCD for restitutions and recommendations with all the stakeholders mentioned above

It was obviously not possible to see everything. The main interlocutors of the Ministry of Transport, the RVF and the CVM nevertheless endeavored to reveal essential aspects of their activities as well as their main partners.

Interviews with maritime pilots and more generally users could also have improved this report. The Technical Visit nevertheless made it possible to enter into contact with officials of the Congolese Maritime Lines (LMD) who were able to express needs in terms of “economic” navigation in the bief maritime.

Reusable communication supports were provided bearing:

- On the issues and governance (institutional context);
- On the current description, in the DRC, of the development (according to IHO standards) of hydrography and marine cartography;
- Finally, on the main lessons learned immediately after the Technical Visit.



Projet Belgo-Zaïrois - Carte du fleuve Zaïre de Malela à Boma - N° 30.200 éditée par la RVM (ex CVM) en juillet 1987

The discussions were professional and constructive. Recommendations were made. Some of them can be carried out in the short term.

It should be noted that the technical exchanges (bief maritime) focused on the obligations of the SOLAS convention (Chapter V) as well as the expected socio-economic benefits. As such, hydrographic investments can generate very substantial or even rapid financial savings, in particular via:

- minimizing dredging operations;
- optimization of ship loading;
- the reception of new vessels with greater capacities but with much more demanding dimensions in terms of navigation constraints;
- night navigation.

Effectiveness vis-à-vis IMO (IMO Member State Audit Scheme Programme : IMSAS) (bief maritime)

Reference : Programme d’audit des États Membres de l’OMI - Audit de la République Démocratique du Congo - 20 au 29 mai 2017 Projet de rapport d’audit intermédiaire

Summary: Concerning hydrography, with reference to the SOLAS Convention (chapter V - rule 9), the report states (Findings):

- that the maritime aids to navigation service does not collect or compile hydrographic data in order to keep nautical charts up to date and disseminate the nautical information necessary for the safety of navigation;
- that it could not be verified that the bathymetric survey campaigns carried out by the CVM led to the updating of nautical charts;
- that the DMVN, responsible for analyzing hydrographic data, was unable to demonstrate possession of this data;
- that the DRC does not have a nautical chart publication service and does not develop nautical instructions or documents;
- that a decree authorizes the DMVN to supervise hydrographic works but that these tasks are not carried out.

Comments :

- this report provides information supplementing and clarifying the IMO audit report;
- above all, it provides solutions (corrective actions) likely, once implemented, to respond positively to the findings and deviations reported by the IMO;
- it is suggested that the DRC consult the IHO's contribution to the IMO Member State Audits program made during a Technical Visit to Morocco (15 – 19 May 2023): <https://iho.int/en/capacity-building-assessment> (List of Technical and High Level Visits).

4 International and regional cooperation – Defense


a. [International and Regional Organizations]

OHI/IHO Status	Commission hydrographique régionale de l’OHI	OMI/IMO	AISM/IALA
Membre	Membre CHAtO/EAtHC	Membre	Non Membre

b. [Defense and security arrangements]: Subject not discussed during the visit.

PART B – DRC – EVALUATION

5 Involvement in the Regional Hydrographic Commission (EAtHC)

Constats	Actions
<p>In recent years, the participation of the DRC in EAtHC meetings has not been systematic.</p>	<ul style="list-style-type: none"> • Participate in the next EAtHC (18th) plenary in 2024 which will take place in Morocco (Casablanca on May 1, 2 and 3) https://iho.int/en/eastern-atlantic-hydrographic-commission • this participation, which primarily concerns the new contact points cited in the IHO directory (yearbook), will be able to integrate the RVF and especially the CVM
	<ul style="list-style-type: none"> • In particular, participate in the hydrographic seminar which will precede (April 29 and 30, 2024) at the same location. • Point of contact : henri.dolou@shom.fr

6 Preliminary contacts

The visit was mainly prepared through exchanges with UKHO, Shom and the collection of open information on the Internet.

UKHO was consulted as a producer of nautical charts (paper and electronic) and nautical publications.

The Shom was consulted as:

- NAVAREA II Coordinator;
- EAtHC capacity development coordinator;
- International Card Portfolio Coordinator for Region G.

UKHO provided files (GeoTiff) of its nautical charts (Appendix H).

These were printed at Shom and distributed on site.

Contacts have also been established with Angola, which shares the bief maritime of the Congo river with the DRC.

7 Technical Visit Contact Points – IHO (P5-Yearbook) and EATHC Correspondents

The contact points for the Technical Visit are listed in Appendix D.

Concerning IHO publication P5, an update is necessary: this is provided in Appendix G.

Current IHO Directory reference:

https://iho.int/uploads/user/pubs/periodical/P5YEARBOOK_ANNUAIRE.pdf

The update :

- Confirms the previous Contact Points (or Focal Points), namely:
 - M Patrick MUSITUMBU ITAKALA (Inspecteur au pool Maritime, Fluvial et Lacustre - DMVN)
 - M Marc BAZONGA BAZA (Chef de Division Provinciale (Kongo Central) des Transports, Voies de Communication et de Désenclavement - MTVCD)
- Takes into account the specificity of the DRC of having two hydrographic institutions:
 1. The Régie des Voies Fluviales (RVF) for navigation in the bief supérieur (Congo River = Lualaba, after Kisangani to the source - the lakes and other tributaries) and the bief moyen (Congo River from Kinshasa to Kisangani, rivers : Kasai, Kwilu and Kwango)
 2. The Congolaise des Voies Maritimes (CVM) for navigation in the inferior or maritime bief of the Congo River (estuary)

DESCRIPTION OF MARITIME ACTIVITIES

8 National Maritime Affairs - Actors


The duration of the visit (14 working days) made it possible to meet important players in the maritime and river transport chain.

Representatives of defense (Naval Force), environment (Water Resources), terrestrial cartography (Geographic Institute) were involved.

The interviews focused on the issues associated with hydrography: beyond navigation safety (international commitments – SOLAS), socio-economic performance through port capacities to accommodate ships (including larger ones), the optimization of their loading (through the depths shown on nautical charts) and the reduction of very costly waiting times for ships due to lack of being able, in particular, to navigate at night.

It was recalled that hydrography is an applied science dealing with the measurement and description of the physical elements of the seas and coastal zones. That its mastery necessarily intervenes in coastal protection (coastal development) thus underlining the transversal nature of hydrography (physical oceanography is part of it) and consequently, at the governmental level, its interministerial ambition.

8.1 Main national actors

<p>8.1.1 MTVCD/ SG et DMVN [Ministère des Transports, Voies de Communication et de Désenclavement/ Secrétariat Général et Direction de la Marine et des Voies Navigables]</p>	 <p>MINISTÈRE DES TRANSPORTS, VOIES DE COMMUNICATION ET DE DESENCLAVEMENT</p>
--	--

The MTVCD has among its missions:

- The organization and management of river, lake and maritime transport, meteorology; of the Merchant Navy;
- The operation of maritime, river, lake and meteorological infrastructures;
- Maritime, river and lake transport equipment
- Qualification of technical personnel in maritime, river and lake transport
- The development of the national transport policy;
- The promotion of inter-modality of transport and its platforms;

It has in particular: a General Secretariat, the DMVN (IHO correspondent), the LMC, ONATRA and METTELSAT.



Ministère des Transports, Voies de Communication et de Désenclavement (MTVCD)
From left to right : SE Monsieur le Ministre Marc EKILA LIKOMBO, Henri DOLOU, John AKONDA MABONDU, Marc BAZONGA BAZA, Ernest KASISI, Patrick MUSITUMBU ITAKALA



Discussions with SG M Jean Marie ABOLIA TABA MOPOLO on the wandering passes of the bief maritime described on nautical chart UK 657



Meeting of MTVCD/SG “stakeholders” in attendance:

- MTVCD/SG par intérim
- MEDD/DRE [Ministère de l’Environnement et de Développement Durable/ Direction des Ressources en Eaux]
- OGEFREM [Office de Gestion du Fret Multimodal]
- LMC [Ligne Maritime Congolaise]
- ONATRA [Office National des Transports]
- RVF [Régie des Voies Fluviales]
- CVM [Congolaise des Voies Maritimes]

- FORCE NAVALE
- DMVN
- IGC [Institut Géographique du Congo]

8.1.2 RVF : Régie des Voies Fluviales



In comparison with other IHO member countries, the RVF, under the technical supervision of the MTVCD, fulfills the operational role of Hydrographic Service of the Congo River (excluding the bief maritime), rivers and lakes of the DRC. The RVF is not directly known to the IHO. This will be fixed.



Barge pusher and baleinières - Pool Malebo - Kinshasa

The RVF has among its missions:

- studies and implementation of aids to navigation;
- the development and maintenance of navigation channels as well as the cleaning (dredging) of ports;
- the establishment of surveys and hydrographic maps;

Appendix C1 gives some additional details about this organization.

The RVF has significant means of aids to navigation, hydrography and cartography as illustrated in the following photos:



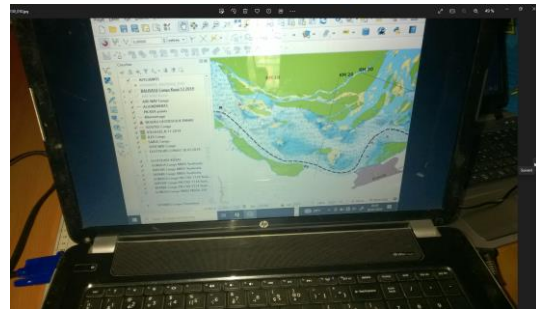
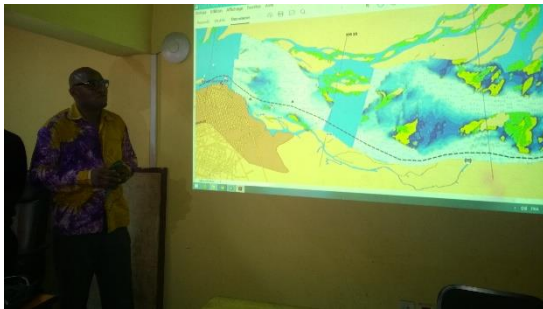
Baliseur Lomela



Bouées et signaux de balisage



Hydrographic “canot” – Hydrographer – Geodesy and bathymetry equipment



**RVF Data Processing Center (Centre de Traitement de Données CTD)
Presentation of bathymetric charts of the Congo River**

8.1.3 CVM : Congolaise des Voies Maritimes



Compared to other IHO member countries, the CVM, under the technical supervision of the MTVCD, fulfills the operational role of Hydrographic Service of the bief maritime of the DRC.

The CVM is not directly known to the IHO. This will be fixed.

The CVM has among its missions:

- The study of navigability and development of the bief maritime reach of the Congo River and the territorial sea of the DRC;
- Execution of development and maintenance works on the bief maritime of the Congo River and the territorial sea of the DRC;
- The piloting of boats using the territorial sea of the DRC;

- Operation and management of the Coastal Maritime Radiocommunications Station.

The CVM therefore executes:

- Hydrographic studies and works: surveys of access channels, port surveys and mooring areas. The hydrographic studies carried out by the CVM aim to improve navigability conditions in the bief and essentially make it possible to guide the work of aids to navigation, dredging and the piloting of ocean-going vessels which serve Congolese maritime ports;
- Marking work (limitations of the waterway) using navigation lights, buoys and other navigation aids (lighthouses and beacons);
- Dredging work (deepening of channels and cleaning of quays). The official mark is 26 feet (7.9 m) “high tide both on the descent and on the ascent”.

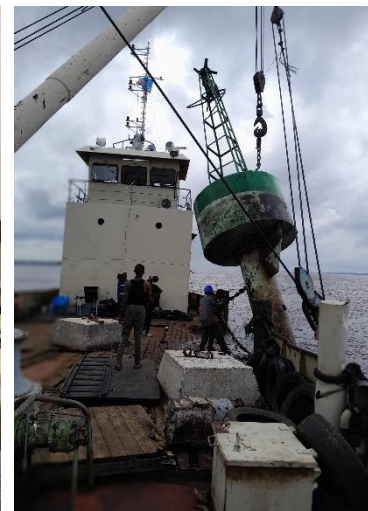
The CVM writes and locally distributes notices to mariners (telegrams)

Annex C2 gives some additional details about this organization.

The CVM has means of aids to navigation, hydrography and cartography as illustrated in the following photos. The TV nevertheless did not make it possible to see all the means of hydrographic intervention at sea and their operating conditions. Apart from numerous texts and works now of a historical nature, there are few current Congolese references which the visiting team was able to obtain. The CVM is undoubtedly not described and valued here as it should be.

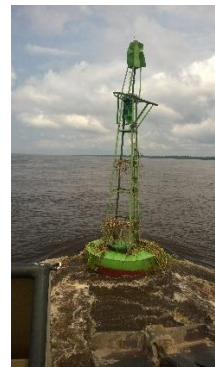


Baliseur Singini



Hydrographic data processing service.





Matadi



Boma



Banana (future deep water port)



Coastal erosion between Banana and Muanda

<p>8.1.4 Divers: METTELSAT – ONATRA – OGEFREM – FORCES NAVALES – IGC – CICOS - LMC</p>	
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These organizations were not visited. They were met or at least participated in the meetings organized at the General Secretariat of the MTVCD.

Concerning the economic aspects, seen from the side of the users of the maritime reach, precise exchanges were able to take place with the LMD (Congolesse Maritime Lines: Mr. Timothée NGUNGA WAMPILUKILA - Provincial Director based in Matadi).

The following were discussed:

- the subject of channel curvatures for boats whose length increases up to 200m
Quote: *“The presence of many meanders in the bief limits the length of ships to 200m thus depriving those over 200m from entering the bief while shipbuilding today is moving towards vessels of length varying between 200 and 250m”.*
- night navigation
Quote : *“Night navigation is highly anticipated by users. For example the deadline for the ship to pick up its pilot in Banana is 2:00 p.m. Any ship arriving after 2:00 p.m. must wait until the next day. If he has to catch his pilot at 6:00 a.m., he will wait for 16:00 hours. For a vessel whose rental is USD 18,500, the charterer loses USD 12,334.*

The TV did not provide immediate answers. It nevertheless seems necessary to study how precise digital charts (the CVM has capabilities) adapted to on-board visualization tools such as ECDIS (Electronic Chart Display and Information System) or specific for maritime pilots (Portable Pilot Unit: PPU which receive GPS on a background of electronic charts) could respond to this without necessarily generating considerable additional costs in terms of aids to navigation.

8.2 National coordination

Coordination relating to aids to navigation, hydrography, oceanography/hydrology and nautical cartography must be organized. This is the usual role of a HC: National Hydrographic Committee.

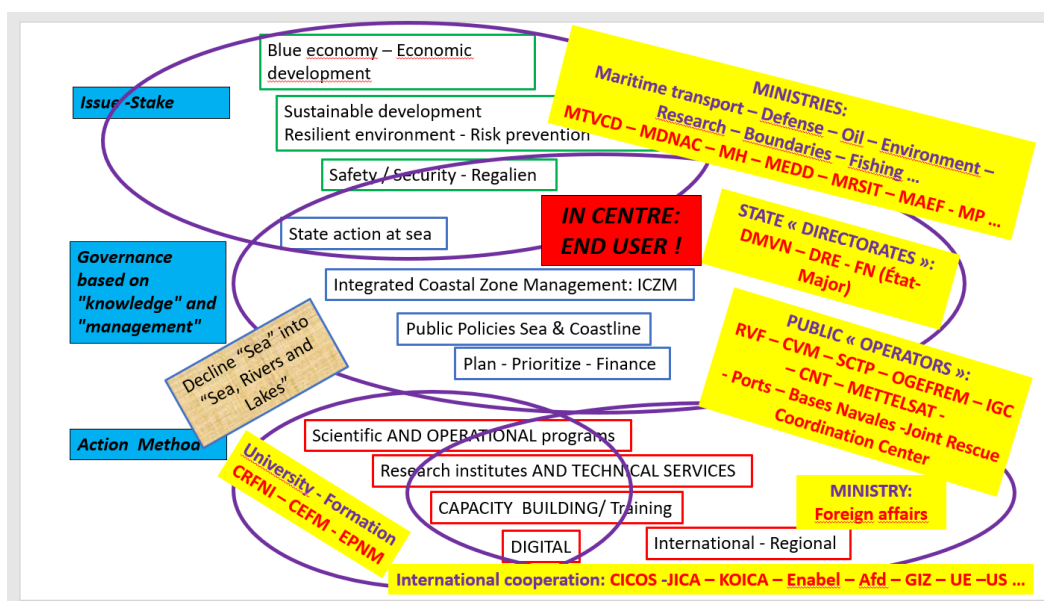
The advantages of such a coordination committee are known:

- Identification and shared knowledge of needs and joint search for solutions including the specification of data acquisitions necessary for the provision of services and products to users;
- Pooling of human and material resources. At the heart of pooling:
 - the acquisition of hydrographic, hydrological or oceanographic data at the sea (coast), on the river and in ports with existing ships or boats. The collection of data can only be economically conceived if it is widely shared (one piece of data - several applications - the production of nautical documents being only one among others) and exploited
 - their qualifications, archiving, distribution shared at the national level. Techniques and tools are increasingly mastered with databases and communication and download portals. This involves setting up geospatial data infrastructures (MSDI – Maritime Spatial Data Infrastructure). This requires dedicated IT structures and skills to rely on;
 - shared projects (navigation, marine environment, safety, infrastructure development, etc.) on the creation of a “marine and river geosciences” knowledge base;

Such a committee is multidisciplinary (transport/navigation, environment, safety/security, fishing, research and teaching in oceanography/hydrology, etc.) and interministerial. This was clearly echoed by the Minister of MTVCD.

- Note: such a committee does not nevertheless constitute an operational national hydrographic-oceanographic/hydrological-cartographic research, development and production body. We need armed arms with resources such as the RVF and the CVM

The ministries and organizations concerned are listed on the following illustration.



8.3 National actors and international cooperation


8.3.1 Japan International Cooperation Agency (JICA)	 Japan International Cooperation Agency
--	--

It was a matter of making contact, with the task of Congo returning with constructed projects.

To note :

- That JICA is involved in transport and found the subject interesting;
- That it was also necessary to think about digital technology and therefore the training of computer scientists;
- That in terms of digital cartography, JICA had a project in Kinshasa;
- That there was a collaboration with CNT: National Center for Remote Sensing of the DRC;
- That there was a scholarship program:
 - For internships
 - But also long-term training
 - English is often the language used
- That JICA also places importance on capacities relating to interpersonal skills and not just know-how: managerial: “Japanese work spirit”

To Congo now to write for a request for technical cooperation.

8.3.2 Delegation of the European Union to the DRC (EU)	
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It was also a matter of making contact, with the Congo tasked with returning there with built projects.

To note :

- That a major project is underway: strategic corridor No. 6 from Douala to Kampala. It includes a river component in the north of the DRC;
- The objectives: opening up, stimulating trade (river more economical than road), reducing poverty, protecting the environment, etc.
- The EU representative for the PANAV project (Project to Support the Navigability of Rivers and Lakes in the DRC) was able to observe:
 - That the RVF had only carried out a few long-term hydrographic campaigns (e.g. 4 months) since the equipment was made available (2 ships, 13 hydrographic boats, etc.). The financing of the operation (fuel, remuneration, etc.) of the RVF by the State is problematic;
 - That in the absence of data acquisition, updating navigation albums was problematic with a risk of obsolescence;
 - That the user had not been sufficiently put in the loop from the start. Moving from paper to digital requires time to change the habits (of the sailors but also of the locals assisting them in difficult passages) and to appropriate new technologies;
 - That vandalism problems also needed to be resolved.

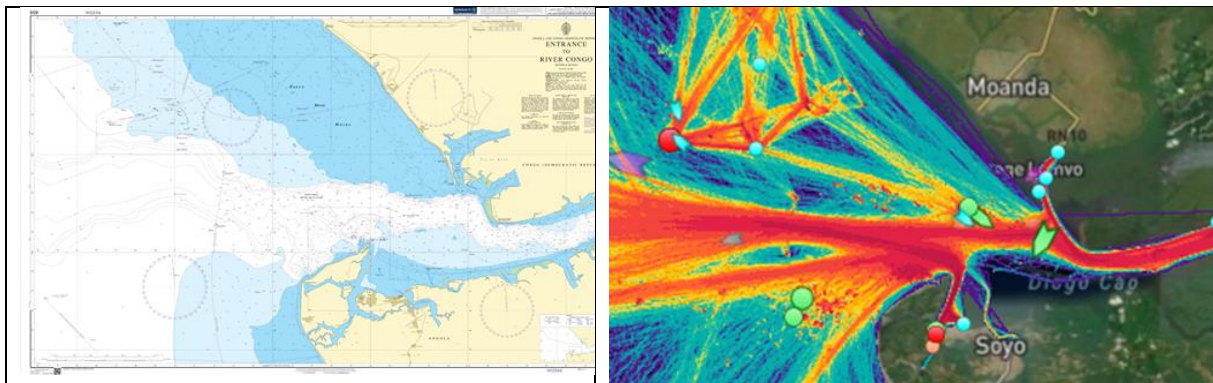
The EU was able to recall that in terms of development it was appropriate to separate what is dealt with:

- bilaterally with other foreign scientific and technical organizations,
- with international development agencies
- between governments via embassies

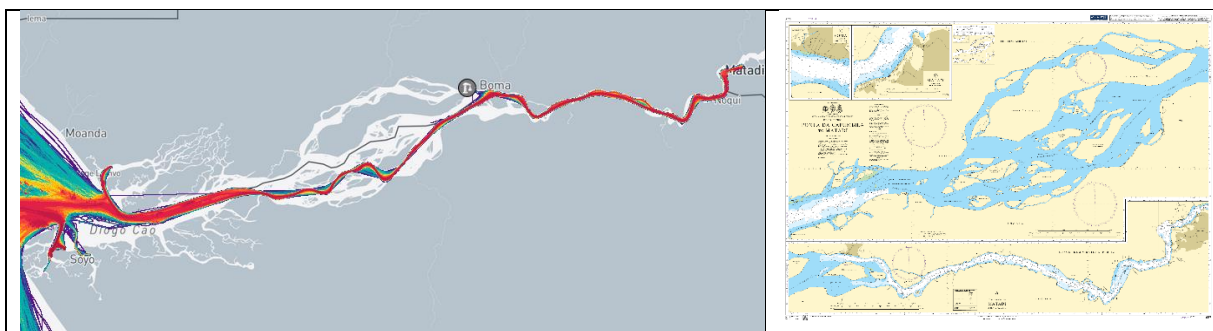
9 Maritime trade and traffic – Marine cartography

9.1 Maritime traffic

AIS data (source : <https://www.marinetraffic.com>)



General situation of maritime traffic offshore and at the mouth of the Congo River



Traffic Maritime traffic in « bief maritime » of the Congo river

9.2 Charting

9.2.1 Official “SOLAS” charting of the DRC (see Annex H)

There are Portuguese and British paper charts.

Only UKHO produces electronic navigational charts (ENC). Considering this, the function of “Primary Chart Authority”, through the production of nautical documentation, is therefore carried out by the UKHO. This is not recorded in a bilateral “SOLAS” arrangement.

These charts are not co-published.

The quality of these charts: several problems arise:

- The UKHO does not receive (at least not in a regular and organized manner with the DRC) information relating to hydrography and navigation aids from the DRC (this report allows

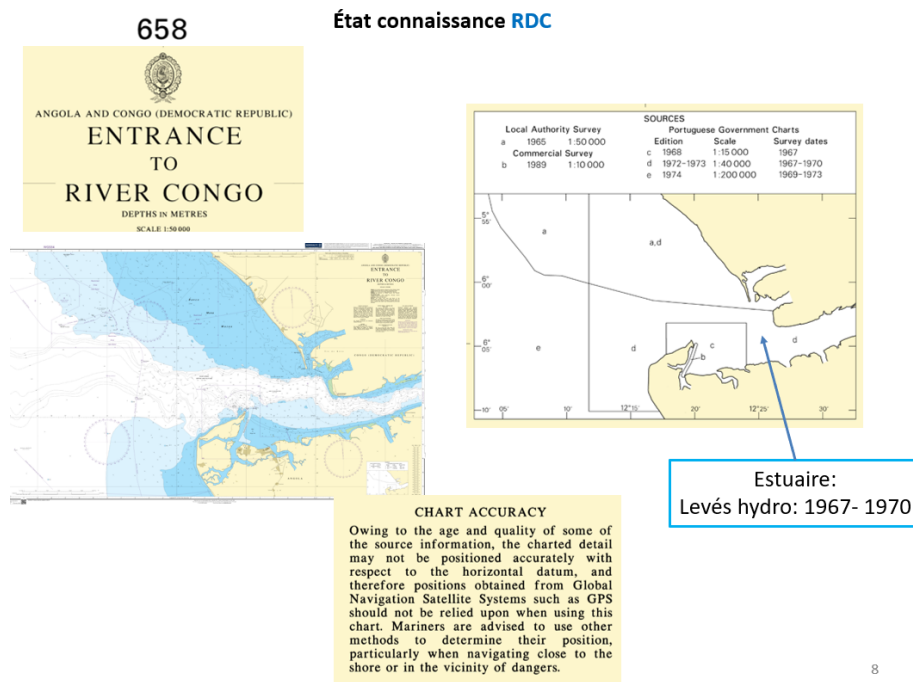
them to be linked). Without this, there will be no updating of the charts which is a SOLAS obligation;

- The “divagante zone” is subject to bathymetric changes (dredging and marking) which are difficult to reproduce on charts whose updates cannot be carried out at the same pace. Operational charting of the maritime bief can therefore only be carried out locally in rapid contact with the main users, who are the maritime pilots of the CVM.

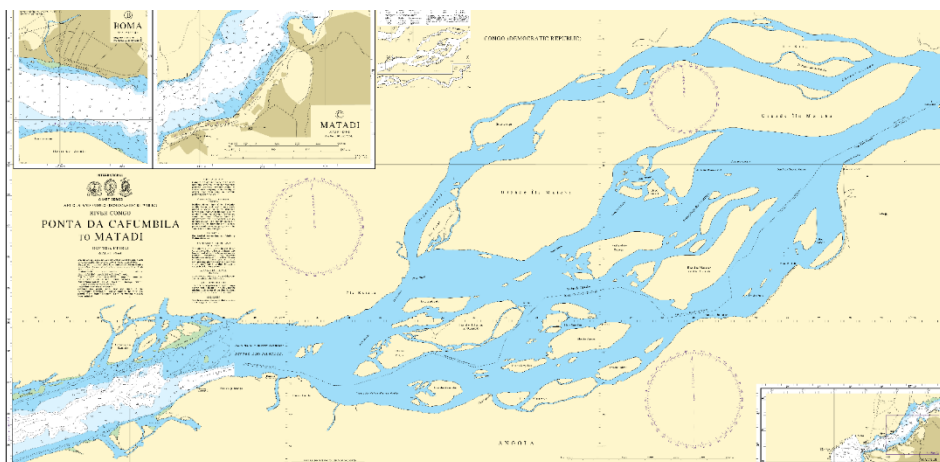
The quality of these charts can be assessed by the states of knowledge described in the following chapter.

9.2.2 State of knowledge

The quality of the charts can be assessed by analyzing the sources (dates of hydrographic surveys) and the notes made.



8



« Région divagante » without soundings on the chart

Source : <https://iho.int/uploads/user/pubs/cb/c-55/c55.pdf>

Democratic Republic of the Congo (G)

Nautical charting / Cartographie marine / Cartografía náutica			Offshore passage Navigation au large Pasaje offshore			Landfall and Coastal passage Atterissage et navigation côtière Recalada y Pasaje costero			Approaches and Ports Approches et ports Apaches y puertos		
Coverage of charts published Couverture des cartes publiées Cobertura de cartas publicadas			100 100 100			100 100 0			100 100 0		
%	Covered by INT or other paper charts meeting S-4 Couvert par des cartes papier INT ou autres conformes S-4 Cubiertas por cartas de papel INT o otras cumpliendo S-4		INT	RNC	ENC	INT	RNC	ENC	INT	RNC	ENC
%	Covered by RNC meeting S-61 Couvert par des RNC conformes S-61 Cubiertas por RNC cumpliendo S-61										
%	Covered by ENC meeting S-57 Couvert par des ENC conformes S-57 Cubiertas por ENC cumpliendo S-57										
Paper charts showing depth in meters Cartes papier avec les profondeurs en mètres Cartas de papel con profundidades en metros			Paper charts referenced to a satellite datum Cartes papier rapportées à un système géodésique satellitaire Cartas de papel referidas a un datum satelital			Data source Source des données Origen de los datos					

This publication has been analyzed. Elements relating to the DRC are obsolete.

10 Responsibility for navigation safety

On a state and regulatory level, this responsibility falls under the Ministry of Transport, Ways of Communication and Opening Up (MTVCD) to which the Department of the Merchant Navy and Waterways (DMVN) depends.

11 Responsibilities of the defense forces

The Naval Forces were able to participate in the introductory and concluding meetings but, due to lack of time, were not met specifically during the Technical Visit.

His admiral was able to express the wish to develop the “Naval Forces” aspects.

The exercise of State Action at Sea E (civil and military) requires support in terms of hydrography and marine cartography which deserve to be taken into account in the national consultation to be put in place.

12 Coastal zone management and environmental protection

The subject was not discussed.

The DRC, like many countries, must face coastal erosion. This could be observed near the port of Banana where a deep water port is being built.



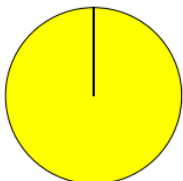
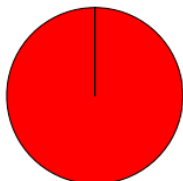
C 55 INDICATORS

13 Status of hydrographic surveys in the national maritime zone

Source : <https://iho.int/uploads/user/pubs/cb/c-55/c55.pdf>

Democratic Republic of the Congo (G)

Hydrographic surveying / Levés hydrographiques / Levantamientos hidrográficos

Survey coverage Couverture hydrographique Cobertura hidrográfica	Depth < 200m Profondeur < 200m Profundidad < 200m			Depth > 200m Profondeur > 200m Profundidad > 200m		
	<div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: green; margin-right: 5px;"></div> Adequately surveyed Correctement hydrographié Adecuadamente levantado </div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: yellow; margin-right: 5px;"></div> Re-survey required Nécessitant de nouveaux levés Requiere nuevo levantamiento </div> <div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; background-color: red; margin-right: 5px;"></div> Never systematically surveyed Jamais hydrographié systématiquement Nunca levantado sistemáticamente </div> </div>	0	100	0	0	0
						

Note:

- These indicators are too old (01/01/2004). It is nevertheless very likely that hydrographic knowledge is still insufficient. It also requires regular checks (passes divagantes) and therefore permanent hydrographic resources necessary for CVM dredging operations and adaptation of the aids to navigation; Concerning the open sea, it is possible that the indetermination of maritime boundaries does not make it possible to define a precise indicator;
- An exhaustive inventory of all data (marine geophysics and topography of the coastline and ports to constitute the knowledge base necessary for marine cartography) must be carried out integrating (sources: DRC and foreign) both private companies (including “surveys” - oil companies), scientific organizations (the Congo River estuary has been the subject of scientific campaigns), foreign hydrographic services (including historical data) and DRC organizations or companies, mainly CVM;
- This inventory should be carried out in conjunction with Angola for an integrated knowledge of the Congo River and its estuary up to both banks;
- Such an inventory must be accompanied by organized (MSDI) and shared data archiving (Internet data portal) which should therefore ideally be Congo-Angolan, involving hydrographers, oceanographers, marine and terrestrial cartographers.

14 Collection and circulation of nautical information

The open sea beyond inland waters

No information concerning the open sea, beyond internal waters, is disseminated (concerning in particular NAVAREA II for the DRC). The question then arises of organizations (at least oil companies, where appropriate naval forces, etc.) capable of observing, collecting and processing likely information in order to :

- to issue NAVAREA II messages (rapid broadcast on Inmarsat)
- update nautical publications (charts, sailing directions) within appropriate deadlines, in particular by notice to mariners (UKHO)

The information flow must cover:

- charts (e.g. new depths, guaranteed dredging thresholds, new quays, new navigation aids, removed wrecks, submarine cables, etc.);
- sailing directions;
- list of lights
- tides (the harmonic constants used for predictions that must be made more reliable and precise using observations of water heights)

Inland waters

The CVM edit local notices (telegrams) concerning the bief maritime.

It has its own bathymetric charts which it can keep up to date.

However, there are no exchanges with UKHO.

The result is that UKHO charts do not reflect real navigation possibilities. The notes made on the charts can be overly dissuasive due to lack of knowledge of the UKHO.

15 Hydrographic survey capacity

15.1 Bief maritime (CVM)

See chapter 8 and Annex C2

15.2 Congo River, tributaries and lakes

See chapter 8 and Annex C1

16 Independent nautical chart production capacity

There is no official national production of “SOLAS” nautical charts conforming to international standards, nor their updating and dissemination.

This is ensured by the UKHO, the only country to publish and distribute electronic navigational charts (ENC).

However, there are national charting capacities.

FORMATION

17 Basic training for senior hydrographic technicians (and not only!)

This chapter is written to establish training plans: first identify needs, find educational solutions, and implement them.

It is recommended to have such plans to then advocate for and obtain targeted training.

Main IHO references:

- <https://iho.int/en/capacity-building-publications>: C-47 (list of approved training courses)
- <https://iho.int/en/standards-and-specifications>: standards of competences: S-5A (CAT A Hydrography), S-5B (CAT B Hydrography), S-8B (CAT B Cartography)

The IHO/EAtHC seminar planned for Casablanca on April 29 and 30, 2024 will address the subject.

17.1 Context

Before embarking on a training plan, one must be able to define what he wants and under what conditions: what professions (without excessively differentiating between river and maritime), for what jobs (state, operational), in what languages, at what levels (initial and to be achieved), for what diplomas, at what costs, at what time, with what “sponsors”...

There are training courses:

- **hydrographers** (basically acquiring georeferenced data such as bathymetry and tide which must also be very useful for dredging operations);
- **cartographers** (geomatics);
- more **general** (marine/river sciences and technology) (hydrology, navigation, navigation aids). We may be interested in training from the IMO, UNESCO (IOC) and IALA
- without forgetting the **support professions** (equipment maintenance, IT specialists) and **managers** (including major state departments such as DMVN);
- They are very common between the River where the DRC is advanced (result of PANAV) and the Sea (estuary) to which the IHO currently gives more importance.

There are training courses:

- Francophones;
- English speaking
- Lusophones with Portugal or even Brazil (DRC/Angola cooperation on the shared river in the maritime reach?).

There are initial diploma training courses:

- CATegory B (senior technicians) (main need to master the practice);
- CATegory A (engineers);
- in both cases, very solid initial training is required (maths, physics). A good initial diagnosis is necessary because training means filling a gap between acquired knowledge and the skill objectives to be achieved.

Approved schools (FIG-OHI-ACI) capable of issuing diplomas are in:

- France, UK, Portugal, Spain ;
- India, Japan, Korea, USA ... ;
- May be soon in Nigeria.

There is also continuing training.

There are face-to-face training courses (this is necessary for practice) and E-learning (or both in “hybrid” mode).

There are :

- training (fees) to be paid
- paid training (or scholarships) quite often within the framework of bilateral defense cooperation (France, Spain, Portugal, etc.);
- paid training (or scholarships) within an IHO framework (e.g. from sponsors: Japan, Korea) to which the DRC can apply because it is a member of the IHO.

There are training courses to share:

- nationally (e.g. land and sea/river mapping, remote sensing) all sectors: state and private (subcontracting);
- bilaterally (Congo Brazzaville and Central Africa for river) (Angola for “bief maritime”); in a regional framework ECCAS (Economic Community of Central African States) with CICOS.

17.2 Initial training of hydrographers

This is fundamental: having sufficient quantity and quality of hydrographs at the right time and in a sustainable manner (Forward Management of Workforce, Jobs and Skills).

The DRC, according to the information collected, does not currently have managers who have had sufficient specific and approved training in hydrography:

- The RVF was able to benefit from significant training as part of the European PANAV project. Capacity building component: operational hydrology, geodesy, topometry, topography, bathymetry and digital cartography, etc.
- The CVM trains its agents (initial level which may be high) on the job.

Hydrographer training:

- The recommended training is that offered by schools whose programs are approved by the FIG/OHI/ACI (International Federation of Surveyors, International Hydrographic Organization, International Cartographic Association) with Category B (CAT B).
- List of approved programs at: <https://iho.int/en/ibsc-recognized-programmes>. There are many programs in English, French, Portuguese and Spanish languages.
- Concerning the French language, the Shom 2024 training catalog (contacts included) is available at <https://www.shom.fr/fr/nos-activites/formation>. This is a 3rd degree (license) course that is very demanding in terms of initial knowledge for mathematics and physics. It can be followed by young people who already have experience in geomatics, geodesy, physical oceanography or even maritime navigation.
- Concerning the English language, there are numerous training courses abroad such as that of the Royal Navy's Hydrography CAT B (<https://www.gov.uk/government/organizations/uk-hydrographic-office/about/about-our-services#cartographic-training>).

- These training courses will provide sufficient versatility to meet almost all of the skills requirements necessary for data acquisition in the field. On his return to his country, the CAT B hydrographer will be able to train the “hydrographer assistants” that the country needs (“CAT C”).
- The practical training which complements the theoretical training of schools will be, for hydrographers having to specify or conduct dredging operations, appropriately carried out in an organization (e.g. port, river) itself operating dredging and having a service responsible for hydrography.

Note 1: human investment must be accompanied by an investment in sufficiently recent operational material resources so that trained personnel can immediately put their knowledge into practice after their training.

Note 2: given the size of the country and its colossal challenges, it will be up to the DRC to also provide for the training of CAT A hydrographic engineers (Hydrography). Candidates for these training courses may have previously followed a CAT B course. It would be appropriate to have a CAT A at the RVF and a CAT A at the CVM. The needs of CAT B are greater in number.

17.3 Initial training of “marine” cartographers

This is also an equally important objective that must be achieved simultaneously. Users of the river and the bief maritime (maritime pilots in priority) will not be able to have their needs met without national cartographic capacities.

While it may be possible to entrust a third country with offshore “oceanic” charting at the mouth of the Congo River (Banana) where the seabed is generally deep and above all stable, this is not possible in the bief maritime in the region of the wandering passes (inland waters).

Cartographic skills must integrate, in addition to the management of data in digital bases and their traduction into electronic navigational charts, regular updating and provision (dissemination) capabilities to users taking into account their on-board navigation tools (smartphone, Portable Pilot Unit, etc.).

Category B training (CAT B) is then also recommended.

List of approved programs (less numerous than in hydrography) at: <https://iho.int/en/ibsc-recognized-programmes>

In the context of a possible rapprochement with the United Kingdom, it seems appropriate to take an interest in the “Nautical Cartography CAT B at UKHO Taunton” (IHO - Nippon Foundation Geospatial Marine Analysis and Cartography: GEOMAC). <https://www.gov.uk/government/organizations/uk-hydrographic-office/about/about-our-services#cartographic-training>

17.4 Also have “support” and “managerial” skills - Apply

The staff, once trained, will have to quickly put their theoretical knowledge (school) into practice and then validate their practical qualification after two years: that is to say, move on to operational work by conducting surveys operated by cartographers or specialists in the maritime or river environment.

It is also recalled the importance :

- the “Support” function in specific equipment (GPS, echo-sounders, tide gauges, etc.): maintenance in operational condition of equipment, IT (software, databases, data distribution portal, webmaster, etc.).
- the “management” function which will be extremely important for globally coordinating at the national level (inter-organizations) the development of hydrography and marine and river cartography of the country:
 - exhaustiveness of the needs (to be planned) to be satisfied (navigation, coastal development, coastal protection, etc.); Definition of the corresponding products (charts in particular);
 - identification of all stakeholders (public and private) who have an interest in cooperating to benefit (they come together to pool capacities);
 - definition of the production systems to be implemented: hydro-oceanographic/hydrology, cartographic and support (logistics) functions;
 - definition of means of intervention at sea (boats, boats);
 - definition of on-shore infrastructure for data processing and archiving;
 - definition of governance (supervision, contracts of objectives and means therefore financing, agreements)
 - definition of human resource needs in sufficient quantity and quality for all structures and professions combined;
 - Definition of financial needs.

18 Continuing training in hydro-oceanography - cartography and related activities (navigation aids, port infrastructure and coastal protection works) – Management

At the international level in hydrography

There are actually many opportunities and facilities for maintaining his knowledge of hydrography. One still need to know them and be encouraged to follow them. Some possibilities:

- IHO:
 - which offers training materials at: <https://iho.int/fr/publications-sur-le-renforcement-des-capacites> . In particular, there is a high-quality hydrography manual;
 - who organizes seminars. EAtHC regularly organizes seminars. The next one taking place in Casablanca on April 29 and 30, 2024 (<https://iho.int/en/eastern-atlantic-hc>)
- Shom (<https://www.shom.fr/>), in addition to the statutory training of its school (CAT B) also offers opportunities to train in tide gauge (<https://www.sonel.org/>);
- AFHy (Association Francophone d’Hydrographie): French-speaking Hydrography Association (<https://www.afhy.fr/>) where hydro-cartographers of ports and rivers meet in particular.

Note :

- Also identify E-learning opportunities that will develop, in particular the future IHO E-learning platform (and soon that of Shom) within which training materials will be available.

- There is a need for regional training schools (West and Central Africa) in hydro-oceanography-cartography. It is appropriate to move away from the current situation where there would be no other alternative than to enroll the agents to be trained in hydrography schools outside the African continent. They may be French-speaking or English-speaking. The contacts that the IHO has had so far in West and Central Africa have not really made it possible to identify the structures (schools, academies, etc.) immediately ready to host training for hydrographers and approved cartographers. The following have been identified as potentially being able to host training courses:
 - Two national hydrographic services - capable of offering complete training courses approved by the IHO/ACI/FIG (CAT B) - having recently considerably increased their hydro-oceanographic capacities, namely:
 - Nigeria: the NNHO (Nigerian Navy Hydrographic Office) which has a school in Port Harcourt (NNHS: Nigerian Navy Hydrographic School);
 - Morocco: DHOC (Hydrography, Oceanography and Cartography Division) of the navy;
 - Two maritime education centers more likely to offer more specialized than approved training, namely:
 - RMU (Regional Maritime University) of Accra (Ghana) ;
 - the ARSTM (Regional Academy of Marine Sciences and Techniques) in Abidjan (Ivory Coast).
 - We will add to these the CICOS which plays a fundamental role in the Congo basin

Miscellaneous at national level (DRC)

It is likely that national skills (public, private) were not inventoried sufficiently exhaustively during the Technical Visit, such as:

- qualified surveyors, specialists in remote sensing (a method widely used in hydrography) and GIS (Geographic Information Systems - in support of the previously mentioned professions);
- computer scientists skilled in databases and distribution websites;
- engineers and technicians from engineering companies;
- what was mainly missing from the Technical Visit were exchanges with oceanographers/hydrologists and the academic world (research and training). This would have required more time.

These are transversal skills essential to the development of Congolese hydro-oceanography-cartography which cannot be brought together in a single organization.

These skills will be particularly important within the Coordination Committee.

Participation in IHO meetings and more particularly in EAtHC meetings and seminars allows for exchanges with counterparts from other coastal States of West and Central Africa.

Rédacteur



Henri DOLOU

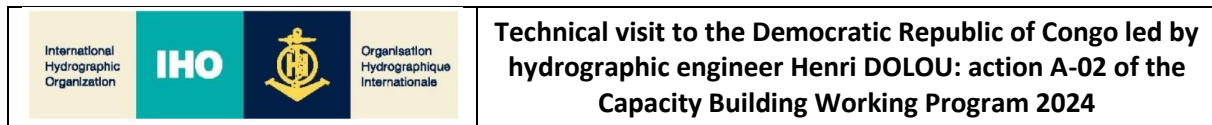
ANNEXES

Annex A : Abbreviations

AEM	Action de l'État en Mer <i>State action at sea</i>
AtoN	<i>Aids to Navigation</i>
CBSC	<i>Capacity Building Sub-Committee (IHO)</i> Sous-comité de renforcement des capacités
CBWP	<i>Capacity Building Work Programme (IHO)</i> Programme de travail de renforcement des capacités
CICOS	Commission Internationale du bassin Congo-Oubangui-Sangha
CRFNI	Centre Régional de Formation en Navigation intérieure (CICOS)
CVM	Congolaise des Voies Maritimes
DMVN	Direction de la Marine et des Voies Navigables
DRE	Direction des Ressources en Eau (MEDD)
EAtHC	<i>Eastern Atlantic Hydrographic Commission (IHO)</i>
CHAto	Commission Hydrographique de l'Atlantique Orientale (OHI)
ECDIS	<i>Electronic Charts Display Information System</i>
EEZ	<i>Exclusive Economic Zone</i>
ENC	<i>Electronic Navigational Chart (sea)</i> Carte électronique de navigation (mer)
FN	Forces Navales
GIE-SCEVN	Groupement d'Intérêt Économique – Service Commun d'Entretien des voies navigables Congo (Brazzaville) – RCA (République Centrafricaine)
GMDSS	<i>Global Maritime Distress and Safety System</i>
SMDSM	Système Mondial de Détresse et de Sécurité en Mer
IALA	<i>International Association of Marine Aids to Navigation and Lighthouse Authorities</i>
AIMS	Association Internationale de Signalisation Maritime
I_ENC	<i>Inland ENC (rivers)</i>
IGC	Institut Géographique du Congo
IHSMA	<i>Hydrographic and Maritime Signaling Institute of Angola</i> <i>Merged in 2021 with the Maritime Port Institute of Angola thus transforming the 2 institutes into a National Maritime Agency.</i>
IHO	<i>International Hydrographic Organization</i>
OHI	Organisation Hydrographique Internationale
IMO	<i>International Maritime Organization</i>
OMI	Organisation Maritime Internationale
IMSAS	<i>IMO Member State Audit Scheme</i>
JICA	<i>Japan International Cooperation Agency,</i>
LMC	Ligne Maritime Congolaise
KOICA	<i>Korea International Cooperation Agency</i>
MSI	<i>Maritime Safety Information</i>
RSM	Renseignement de Sécurité Maritime
MAEF	Ministère des Affaires Étrangères et Francophonie
MDNAC	Ministère de la Défense Nationale et Anciens Combattants
MEDD	Ministère de l'Environnement et de Développement Durable
MRSIT	Ministère de la Recherche Scientifique et Innovation Technologique
MTVCD	Ministère des Transports, Voies de Communication et de Désenclavement

METTELSAT	Agence Nationale de Météorologie et de Télédétection par Satellite
MOWCA OMAOOC	<i>Maritime Organization of West and Central Africa</i> Organisation Maritime de l’Afrique de l’Ouest et Centrale
MRCC	<i>Maritime Rescue Coordination Centre</i>
MSDI	<i>Maritime Spatial Data Infrastructure</i> Infrastructures de données spatiales maritimes
NAVAREA	<i>NAVigational AREAs (WWNWS)</i> Zones de navigation (SMAN) NAVAREA national coordinator: responsible for dissemination of MSI (RSM)
NC CM	<u><i>Nautical Charts</i></u> Carte marine
NHC CNH	<i>National Hydrographic Committee</i> Comité National Hydrographique
NtMs	<i>Notice to Mariners</i> Avis aux navigateurs
OGEFREM	Office de Gestion du Fret Multimodal
ONATRA	Office National des Transports (ex SCTP : Société Congolaise des Transports et des Ports)
PANAV	Projet d’Appui à la Navigabilité des Voies fluviales et lacustres en RDC
PCA	<i>Primary Charting Authority</i> Autorité cartographique principale
PMAWCA AGPAOC	<i>Port Management Association of West and Central Africa</i> Association de Gestion des Ports d’Afrique de l’Ouest et du Centre
RDC DRC	République Démocratique du Congo <i>Democratric Republic of congo</i>
RHC CHR	<i>Regional Hydrographic Commission (EAtHC)</i> Commission Hydrographique Régionale (CHATO)
RVF	Régie des Voies Fluviales
Shom	Service hydrographique et océanographique de la marine (France) <i>French Hydrographic and Oceanographic Service</i>
SMAN	Système mondial d’avertissement de navigation <i>Worldwide Navigational Warning Service (WWNWS)</i>
SMDSM	Système mondial de détresse et de sécurité en mer <i>Global Maritime Distress and Safety System (GMDSS)</i>
SOLAS	<i>[United Nations] Convention for the Safety of Life at Sea</i> Convention pour la sauvegarde de la vie humaine en mer
UKHO	<i>United Kingdom Hydrographic Office</i>

Annex B-1 : Terms of reference of the visiting team of the Regional Hydrographic Commission



Context

The IHO Capacity Building Program aims to coordinate the development of capacities of Member and Associate States in the field of hydrography and nautical cartography in order to meet the objectives of the IHO and the obligations linked to Chapter V of the SOLAS Convention and the United Nations Convention on the Law of the Sea.

In particular, the IHO has decided to promote regional cooperation in West and Central Africa within the framework of EAtHC: the Eastern Atlantic Hydrographic Commission.

Concretely, the IHO proposes to conduct a Technical Visit to the Democratic Republic of Congo which is a member of the IHO and the EAtHC (representation provided by the DMVN, the Directorate of the Merchant Navy and Waterways). Priority meetings would be given to national actors in charge of maritime navigation safety, hydrography, cartography, the coastal environment and training related to the sea. In general, without forgetting navigation in the internal waters, the blue economy and state action at sea.

Objectives

The general objectives of technical visits are as follows:

- interviews with the decision-making authorities of the country visited, emphasizing the importance of hydrography for coastal States and therefore the need to include hydrographic and associated marine cartography activities in national plans;
- support for the development of a national system for collection and diffusion of maritime safety information (MSI) integrated within the Worldwide Navigational Warning Service (WWNWS);;
- assessment of national capacities in terms of planning and carrying out the collection and use of hydrographic data in order to allow the production and updating of the nautical documentation essential for the safety of navigation and in support of others uses (infrastructure management, environmental protection, development of the blue economy, etc.);
- development of recommendations with the actors of the visited country in order to strengthen these capacities in a long-lasting and sustainable manner;
- preparation of IMO audits (IMSAS) and follow-up of recommendations in connection with hydrographic services;
- promote the emergence of development projects in the field of hydrography and nautical cartography in conjunction with IHO secretariat, IMO and funding agencies in order to obtain the sustainable establishment of capacities.

Report

A report on the activities and recommendations of the team will be submitted to the president of the Regional Hydrographic Commission after the visits

For IHO, 19 September 2023
Gabin SOGORB Capacity Building coordinator for EAtHC



Annex B-2 : SOLAS requirements (Chapter V rules 9 and 4)

Extract of IHO Publication M-2 (Version 3.0.7 – June 2018) “THE NEED FOR A NATIONAL HYDROGRAPHIC SERVICE” International Obligations to Provide Hydrographic Services (SOLAS Chapter V Regulations 9 and 4)

SOLAS_Chapter V

International Obligations to Provide Hydrographic Services

International Convention on the Safety of Life at Sea

In July 2002, a revised Chapter V of the International Convention on the Safety of Life at Sea (SOLAS) entered into force.

Regulation 9 of SOLAS Chapter V specifies very clearly the hydrographic services which have to be provided by Contracting Governments. The provision of these hydrographic services is, in effect, an obligation for the Contracting Governments under an International Treaty Law

SOLAS CHAPTER V - REGULATION 9 Hydrographic Services

1. Contracting Governments undertake to arrange for the collection and compilation of hydrographic data and the publication, dissemination and keeping up to date of all nautical information necessary for safe navigation.
2. In particular, Contracting Governments undertake to co-operate in carrying out, as far as possible, the following nautical and hydrographic services, in the manner most suitable for the purpose of aiding navigation:
 - 2.1. to ensure that hydrographic surveying is carried out, as far as possible, adequate to the requirements of safe navigation;
 - 2.2. to prepare and issue nautical charts, sailing directions, lists of lights, tide tables and other nautical publications, where applicable, satisfying the needs of safe navigation;
 - 2.3. to promulgate notices to mariners in order that nautical charts and publications are kept, as far as possible, up to date; and
 - 2.4. to provide data management arrangements to support these services.
3. Contracting Governments undertake to ensure the greatest possible uniformity in charts and nautical publications and to take into account, whenever possible, relevant international resolutions and recommendations.*
4. Contracting Governments undertake to co-ordinate their activities to the greatest possible degree in order to ensure that hydrographic and nautical information is made available on a world-wide scale as timely, reliably and unambiguously as possible.

* Refer to the resolutions and recommendations adopted by the International Hydrographic Organization.

Regulation 4 of SOLAS Chapter V places an obligation on Contracting Governments to ensure that appropriate navigational warnings are issued.

SOLAS V/4 – Navigational Warnings

Each Contracting Government shall take all steps necessary to ensure that, when intelligence of any dangers is received from whatever reliable source, it shall be promptly brought to the knowledge of those concerned and communicated to other interested Governments. *

* Refer to the Guidance on the IMO/IHO World-Wide Navigational Warning Service adopted by the Organization by resolution A.706 (17), as amended

Annex C1 : La Régie des Voies Fluviales (RVF)

Sources :

- LA REGIE DES VOIES FLUVIALES « R.V.F» : document de Mme Jeanne MPUTU LUNGONZO Coordinatrice des Projets de la RVF (Kinshasa -10/07/2023)
- Visit and navigation « IHO » 30 January 2024



Introduction

The Democratic Republic of Congo (DRC) has a very dense hydrographic network with waterways estimated at more than 25,000 km in their natural state, including 15,000 km categorized and classified. This network is an essential link in multimodal transport in the Democratic Republic of Congo. The Congo River ensures the opening up of the Greater Congo and constitutes its backbone. This navigable network is subdivided into three “biefs” which are:

1. The upper bief: Lualaba, lakes and tributaries;
2. The middle bief: Congo River, Kisangani – Kinshasa: 1734 km and the Kasai River, Kwamouth – Ilebo: 607 km and their tributaries;
3. The lower (or maritime) bief: from Matadi to the mouth via Boma. This bief is placed under the management of the CVM.

Legal framework

The Régie des Voies Fluviales, “RVF” is currently a Public Establishment of a scientific and technical nature, with legal personality. Its headquarters is in Kinshasa.

Navigation conditions

The Congo River and its tributaries are subject to weather conditions (influenced by climate change) with periods of low water nevertheless allowing river navigation to continue. “Wandering” sandy areas make navigation difficult.

Floating means: hydrography, aids to navigation

The RVF has floating units:

- Marker boats to maintain marker signals in particular according to the hydrological regime of each watercourse;



- and boats and hydrographic launches (13 and 2) with technical equipment for topography, bathymetry, and hydrometry



Floating means: acquisition (UE, WB)

The RVF fleet (rehabilitation of the *Kauka*, *Lomela* and *Congo* boat markers, acquisition of multifunctional “BMFs” boats *Yaolimela* and *Kasai* and two tributary boat markers in Kindu and Kongolo) and its equipment were acquired as part of the implementation of the Multimodal Transport (PTM) project and another project to support the navigability of river and lake routes in the DRC (PANAV/10th FED), financed respectively by the World Bank (WB) and the European Union (EU). The EU financed the 13 hydrographic boats and the WB 2 equipped hydrographic launches. The provision of these resources was accompanied by a strengthening of staff capacities (18 hydrographers, 12 hydrologists, 13 cartographers, 10 captains and helmsmen profilers, etc.)

Data Processing Center (CTD: Centre de Traitement de Données)

This center is responsible for processing the river data acquired and producing products that can be used by users (databases, digital cartography). An essential service must also be provided:

- making digital charts available to users
- updating these charts and their distribution



Annex C2 : La Congolaise des Voies Maritimes (CVM)

Warning

This annex does not include details (hydrography) as a little more could be provided for the RVF. The CVM has undoubtedly not benefited from communication actions like the RVF within the specific framework of the PANAV project.

There will also have been no time during the Technical Visit to deepen knowledge of CVM.

This annex nevertheless attempts to highlight some specific features of the maritime bief. Certain historical recurrences (région divagante) are quite telling and deserve to be known to those who want to be interested in the CVM, its challenges and its missions. Any further information should be sought on site at the CVM from its agents.

Sources

- « Le bassin hydrographique congolais - Spécialement celui du bief maritime » E. Devroey (époque coloniale) - 1940
- « Étude de l'amélioration du bief maritime du fleuve Congo » (Belgique et Congo – 1969)
- “Hydrography and Navigation on the Congo River - A Century of Visual History” - Paul Van Pul Springer - 2023
- IMPORTANT : Article « problématique de l'aménagement et de l'entretien des voies navigables : cas du bief maritime du Fleuve Congo. Revue Africaine d'Environnement et d'Agriculture (RAFEA) 2021. Mme Christine Tusse Daumbo de la CVM et al
- Navigation (Baliseur *Singini*) on the bief maritime 01 February 2024 and visit of CVM in Boma on 02 February 2024 (OHI)
- Exchanges with M Jean-Willy MANANGA LUAKA Sous-directeur des Études et Aménagements des Passes at CVM - February 2024

Introduction

The maritime bief of the Congo River is the only access route to the ocean in the DRC. This 150 km long maritime bief is the main route of entry for products imported and exported from the country. Section of the Congo River located between the port of Matadi and the mouth of the Congo River at Banana, it has three sections with very different characteristics:

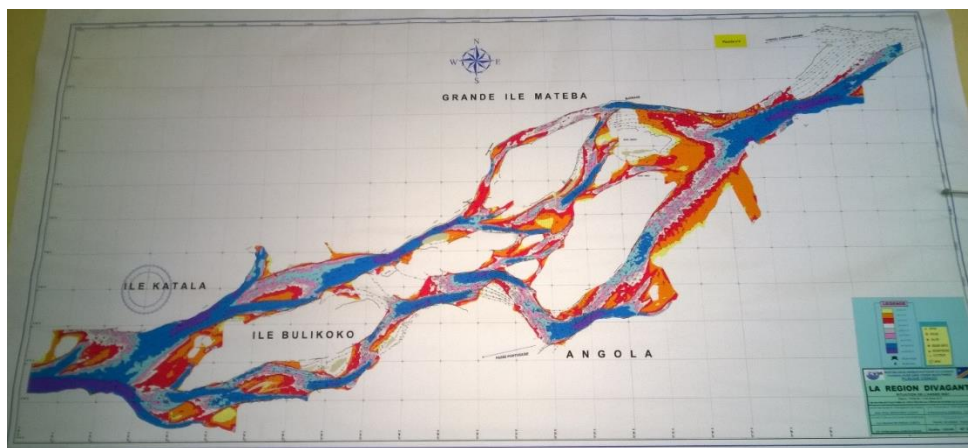
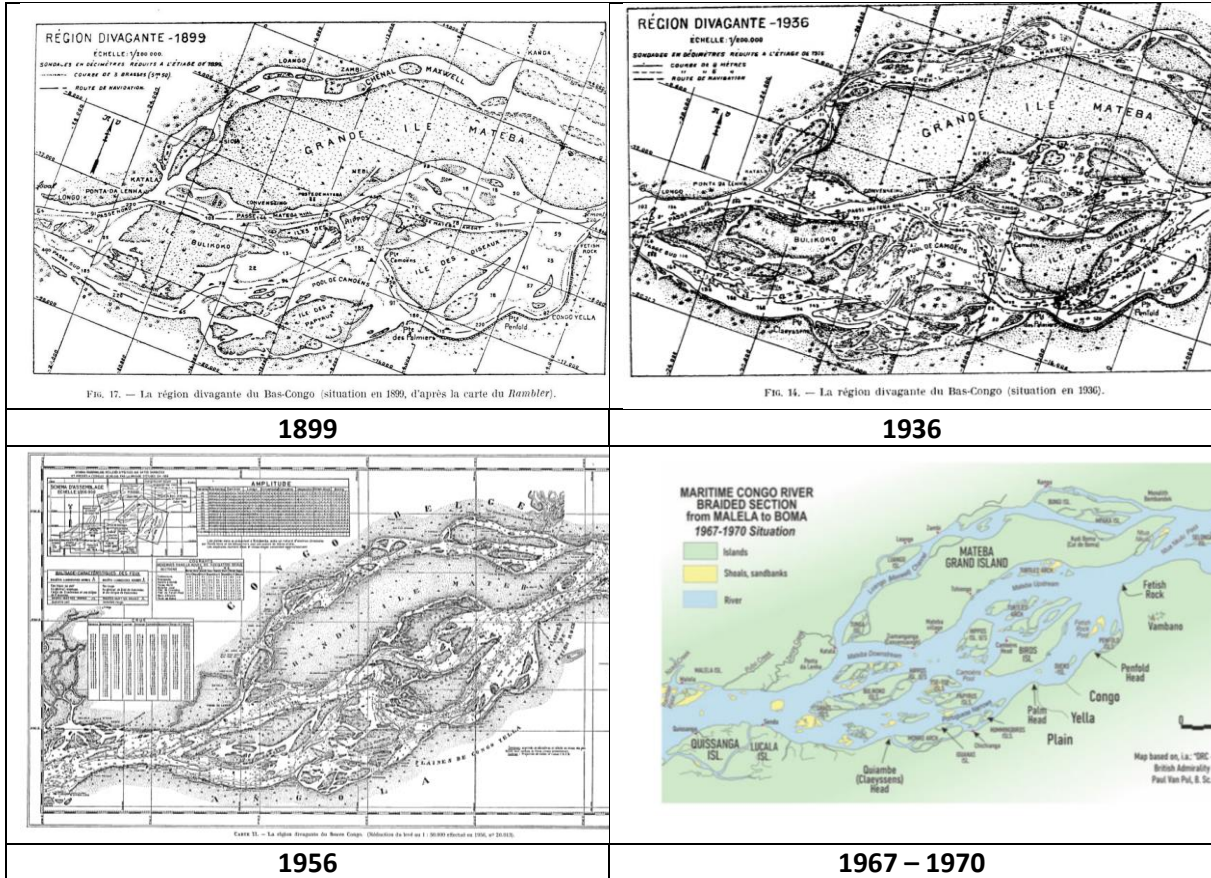
- The Matadi-Boma section, 60 km long, with strong currents and great depths varying from 20 to 50 meters;
- The 60 km long Boma-Malela section has numerous islands, islets and sandbanks with shallow depths of barely 4 to 5 meters in their natural state. The navigation axis regularly undergoes modification: silting phenomena are located in this section called “REGION DIVAGANTE”. The natural depths of the river make this area a major technical constraint and a bottleneck for navigation;
- And the Malela-Banana section close to the ocean, 30 km away and having significant depths, greater than 100 meters.

Legal framework

The CVM was created by Ordinance-Law No. 71-003 of January 26, 1971 as a public company of a technical and commercial nature with its head office in Boma.

Navigation conditions

The maritime ports of Congo (BOMA and MATADI) being located upstream of the “zone divagante”, significant and regular dredging operations must be carried out in this part of the river and buoyage and hydrographic work must be carried out on the entire maritime bief in order to make it accessible to ships.



Now by CVM

Floating means: hydrography

The TV did not allow to see the means of hydrographic interventions at sea and their operating conditions. The CVM nevertheless provided information. In addition to means of marking and dredging, it has:

- batymetric boats with single-beam acoustic sounder;

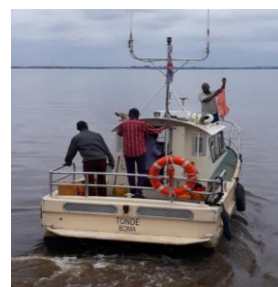
- GPS (RTK station) and total stations;
- acquisition and processing systems such as: Hypac13, Qinsy9 and Surfer16;
- 3 tide gauge stations (scales at Matadi, Boma and Banana);
- ADCP current meters

The means used for hydrographic studies may be very old or recent. The problems to be resolved² are to be able to:

1. deal with breakdowns and preventive maintenance (recent equipment included). This requires the ability to maintain operational conditions: spare parts, tools, skills, operating budget, etc.
2. renew the means when, too old, difficult to repair, their availability drops. Skills, here too, are essential for specifying new equipment (“repairability” included), being able to use and maintain it. Investment budgets are then to be put in place



Hydrographic launch *Mandudi*



Hydrographic launch *Tonde*

² These problems are quite common and affect all organisms across the world. Whether you are at sea for several months or in places with difficult access (or far from suppliers), there is no other choice than to favor the simplicity and robustness of the equipment and equip yourself with on-site capabilities to operational maintenance: spare parts, tools, skills. It can happen that we focus too much on the core business (hydrography, dredging, marking) and neglect all the necessary support around it (mechanics, electricians, IT specialists, managers, human resources, etc.). The establishment of an “ISO 9001” quality management organization should help to organize ourselves to deal with difficulties. No need to immediately seek certification: simply take inspiration from it to better organize yourself with the review of production (e.g. dredging), support (e.g. equipment repair) and management processes. Some international development organizations attach importance to labor organizations. This was well received during the Technical Visit meeting with JICA (Japanese cooperation) at the beginning of February 2024. Before requesting equipment, it may be wise to provide organizational proof that they will be properly used and therefore well maintained. A request for “support for the implementation of CVM quality management” could be well received.

Others boats



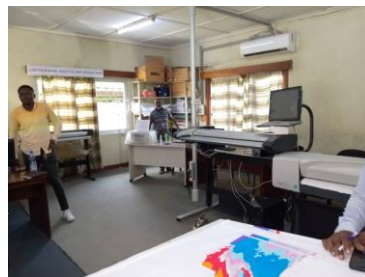
Baliseur *Singini*



Nouvelle drague

Hydrographic data processing service

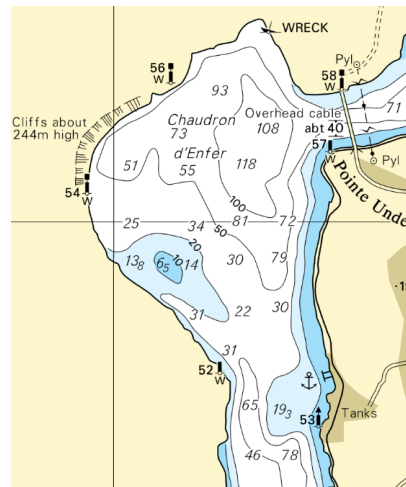
This center produces bathymetric charts. The conditions for making it available to users have not been addressed. Note: maritime pilots belong to CVM



Another aspect of the maritime reach: The “Hell’s Cauldron” in Matadi where the Congo River reorients itself by 90° with very strong currents and whirlpools in the center



Description in 1940



Actual description on chart UK 657



Annex D : Mails List of main contacts - Telephones - Emails

Annex D-1 : Kinshasa

Prénom NOM	Fonction	Tél (+243)	Mail
MTVCD			
Ministère des		Transports et Voies	de Communication et de Désenclavement
SE Marc EKILA LIKOMBO	Ministre	998 226 199	ministre@transport.gouv.cd marcekila7@gmail.com
Jean Marie ABOLIA TABA MOPOLO	Secrétaire - Général	815 150 408	sgtranscomsrdc@gmail.com aboliatm@gmail.com
Nicolas NKAN BISION	SG/ Direction de l'Inspection des transports et d'Audit -SG/AI	815 097 276	nkannicolas@gmail.com
Jeanne TUNDA KASONGO	Directrice Technique (SG)	811 820 958 858 840 024	jeannetunda5@gmail.com
Laurent BAOYI	Directeur des études et Planification (SG). Ancien Directeur de la DMVN	815 193 396	labaoyi@gmail.com .
DMVM			
Direction de la Marine		et des Voies	Navigables
John AKONDA MABONDU	Directeur	810 775 124	akondajohn3@gmail.com
Patrick MUSITUMBU ITAKALA	Inspecteur au pool Maritime, Fluvial et Lacustre Point focal OHI de l'administration des Transports à Kinshasa.	896 062 812	patrickmusitumbu2@gmail.com
Ernest KASISI	Chef de division Infrastructures et travaux Hydro-portuaires	99 49 05 544 90 09 92 910	ernestkasisi@gmail.com
Samy LOMBOTO	Chef de la division flotte		
Yannick NDOMBE	Division des infrastructures et des travaux hydro- portuaire.	824 458 252	yannickndombe624@gmail.com m
RVF			
Régie des Voies Fluviales			
Divine MALUMBA KAPINGA	DG/A		
Jeanne MPUTU LUNGONZO	Coordinatrice des Projets Cellule de gestion	815 112 754	Jeannemputueyeba@gmail.com m
Cédric Luc TSCHUMBU	Directeur Technique	812 230 502	cedricluetschumbu@yahoo.fr
Jiji DIKPO	Sous-Directeur Chef du CTD	815 458 270	dikpojiji@gmail.com
CVM (Kinshasa)			
Congolaise des Voies		Maritimes	CVM « SA »
Tarri ABUBA	CVM/DPEO	820 887 560	
MAMBO YILILA		847 232 673	

Emmanuel chaluposhi	CVM / Conseiller Principal	899 427 278	
METTELSAT Agence Nationale de Météorologie et de Télédétection par Satellite			
Joseph ITELA Y'ILONDO	DG	99 81 65 651	meteordcongo@gmail.com itelajoseph7@gmail.com
ONATRA Office National des Transports			
LUFUNGULA MAKASI	Directeur Département Technique		
OGEFREM Office de Gestion du Fret Multimodal			
Yvette ENGASSE IFASO	Chef de service suivi des Infrastructures du transport intérieur /DFAC	896 885 835	ifasoymette@gmail.com
Dominique MANONO NSENSA			
MDNAC Ministère de la Défense Nationale et Anciens Combattants			
Vice -Amiral Jacques BONYOMA	Etat-Major Force Navale (Kinshasa)	998 862 948	bodybonyoma@gmail.com bonyomajacques6@gmail.com
CPV Kayumba Kabnema Cris	Chef département OPS	810 710 541	
MRSIT Ministère de la Recherche Scientifique et Innovation Technologique			
IGC Institut Géographique du Congo			
Fidèle BALIBUNO LUGANDA	DG	974 449 240	
John KIMSUMBA YOME	Directeur Technique	815 121 766	johnyoaneigc20@gmail.com
MEDD Ministère de Et du développement durable			
DRE Direction des Ressources En Eau			
Louis LUNGU MALUTSHI	Directeur Chef de Service	998 472 531	lungumalutshi@gmail.com
Jean- Marie BOPE	Chef des bureaux Expertises		
CICOS Commission Internationale du Congo-Oubangui-Sangha Bassin			
Georges GULEMVUGA	Directeur des Ressources en eaux	818 970 966	georges_gul@yahoo.fr ggulemvuga2016@gmail.com

Annex D-2 : Matadi - Boma – Banana

Prénom NOM	Fonction	Tél (+243)	Mail
CVM (Boma)	Congolaise des Voies	Maritimes	CVM « SA »
Augustin LENGO	Directeur d'exploitation		
Jean-Willy MANANGA LUAKA	Sous-directeur des Études et Aménagements des Passes	808 854 396	jeanwillyoscar@gmail.com
Daniel N'LANDU N'SAKALA	Chef de service Traitement de Données Hydrographiques		
MAKUALA SEMUA	Chef de service Études Hydrographiques		
Ambwa LAMGONGO MONGA	Sous-directeur Dragage		
Philippe MBELE	Chef section Balisage Aménagement des passes navigables		concordebuld@gmail.com
Hélène MIDIBEYO SHAMA	Hydrographe Formation AFHy (8-26 avril 2024)	829 926 852	smidsmid25@gmail.com
Province	Kongo-Central	MTVCD	
Marc BAZONGA BAZA	Chef de Division Provinciale des Transports, Voies de Communication et de Désenclavement et point focal OHI (MTVCD)	898 389 178	bazongamarc@gmail.com
Affréteur	Ligne Maritime congolaise		
Timothée NGUNGA WAMPIL UKILA.	Directeur provincial Matadi	810 367 530	tngunga@gmail.com

Annex D-3 : Agences internationales – France - United Kingdom - Angola





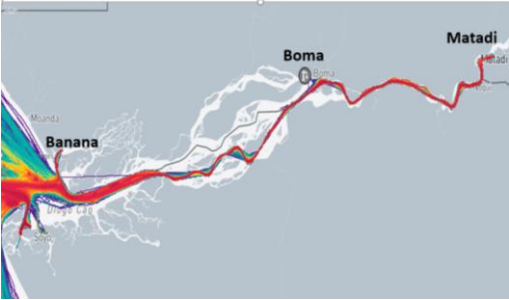



Prénom NOM	Fonction	Tél	Mail
Agences	Internationales	de développement	
JICA	Japan International	Cooperation Agency	
Léon MWAMBA	Directeur Adjoint des Programmes Secteurs Infrastructures, Énergies et Mines	(+243) 82 103 2198	Mwambaleon.cd@jica.go.jp
KOICA	Korea International	Cooperation Agency	
Sandra IBULA		(+243) 99 333 23 10	sandy.ibula@gmail.com






Afd	Agence française	de développement	
PEMBI Bamby	Chargé de projet (biodiversité ...) Proparco		pembib@afd.fr
IBRAHIM-NETTER Safia	Directrice d'agence		ibrahimnetters@afd.fr
UE	Délégation de l'Union	Européenne	
Joost MOHLMANN	Chef de section infrastructures et développement humain	(+243) 845 025 984	joost.mohlmann@eeas.europa.eu
Paul WASUMBUKA	Projet PANAV		
Shom	France	(+33)	
Henri DOLOU	Hydrographe Expert	(0) 6 86 15 14 82	henri.dolou@shom.fr
Pierre-Yves DUPUY	Directeur des missions institutionnelles et des relations internationales	(0) 2 56 31 24 04 (0) 6 38 78 59 55	pierre-yves.dupuy@shom.fr
Gabin SOGORB	Coordinateur CB pour CHAtO/EAtHC Chef de la division des relations extérieures	(0) 2 56 31 23 71 / (0) 6 46 31 12 37	dmi-rex-d@shom.fr gabin.sogorb@shom.fr
Ronan LE ROY	Directeur de l'enseignement de l'école du Shom	(0) 2 56 31 24 09	ronan.le.roy@shom.fr
Julien CORMERY	Nautical Expert - Africa/Indian Ocean Information nautique	Tél. : +33 (0)2 56 31 23 06	julien.cormery@shom.fr
Amandine LEFRANCOIS	NAVAREA II	02 56 31 26 09	amandine.lefrancois@shom.fr
UKHO	United Kingdom	(+44)	
Nathanael Knapp	Head of Partnering and Engagement (East Atlantic and the Caribbean)	Mob: +44 (0)7435 545769 Tel: +44 (0)1823 483553	Nathanael.Knapp@UKHO.gov.uk
Nicholas (Nick) Swadling	Geographic Technical Lead - Africa	+44 (0)1823 483898	Nicholas.Swadling@UKHO.gov.uk
National Maritime Agency	Angola	(+244)	
José Luis Santana	Administrator for maritime security and hydrography	+244 924 108 673 -	josesantana.14.js@gmail.com
Mr Hélder Rufino da conceição	DIRECTOR DE HIDROGRAFIA, OCEANOGRAFIA E INVESTIGAÇÃO CIENTÍFICA	+244 945 123 625	helderufino46.hr@gmail.com helder.conceicao@amn.gov.ao
Dr. Filomeno Lopes Manuel	Head of the Hydrography and Cartography department		

Annex E : Agenda –Events

M Patrick MUSITUMBU ITAKALA et Marc BAZONGA BAZA ont participé à tous les évènements

Objet – Évènement	Observations
J1 : Vendredi 26 janvier 2024	Kinshasa
➤ MTVCD/DMVN [Ministère des Transports, Voies de Communication et de Désenclavement/ Direction de la Marine et des Voies Navigables]	○ John AKONDA MABONDU (Directeur)
➤ MTVCD/SG [Secrétaire Général] 	○ Jean Marie ABOLIA TABA MOPOLO (Secrétaire Général) De gauche à droite : Ernest KASISI, Marc BAZONGA BAZA, Jeanne TUNDA KASONGO, Jean Marie ABOLIA TABA MOPOLO (SG), Henri DOLOU, Laurent BAOYI BOYOMBE, John AKONDA MABONDU, Patrick MUSITUMBU ITAKALA
J2 : Samedi 27 janvier 2024	Kinshasa
➤ METTELSAT [Agence Nationale de Météorologie et de Télédétection par Satellite] (rencontre fortuite au MTVCD)	○ Joseph ITELA Y'ILONDO (Directeur Général)
➤ MTVCD/MINISTRE (+ Directeur de cabinet et Conseiller maritime et fluvial) 	○ SE Marc EKILA LIKOMBO (Ministre) 
➤ Conférence de presse	
J3 : Dimanche 28 janvier 2024	Kinshasa
J4 : Lundi 29 janvier 2024	Kinshasa
➤ Réunion des « parties prenantes » MTVCD/SG en présence : <ul style="list-style-type: none"> ○ MTVCD/SG par intérim ○ MEDD/DRE [Ministère de l'Environnement et de Développement Durable/ Direction des Ressources en Eaux] ○ OGEFREM [Office de Gestion du Fret Multimodal] ○ LMC [Ligne Maritime Congolaise] 	<ul style="list-style-type: none"> ○ Nicolas NKAN BISION (MTVCD/SG par intérim) ○ Vice-Amiral Jacques BONYOMA (État-Major Force Navale) ○ Tarri ABUBA (CVM) ○ Cédric Luc TSCHVMBU (RVF) ○ MANONO NSENSA (OGEFREM) ○ PWEMA KILUMDU (LMC) ○ John KIMSUMBA YOME (IGC/DT)

<ul style="list-style-type: none"> ○ ONATRA [Office National des Transports] ○ RVF [Régie des Voies Fluviales] ○ CVM [Congolaise des Voies Maritimes] ○ FORCE NAVALE ○ DMVN ○ IGC [Institut Géographique du Congo] 	
<p align="center">J5 : Mardi 30 janvier 2024</p>	<p align="center">Kinshasa</p>
<ul style="list-style-type: none"> ➤ RVF/Direction (participation de : OGEFREM, METTELSAT, IGC) 	<ul style="list-style-type: none"> ○ Nico Divine MALUMBA KAPINGA (DG/A) ○ Jeanne MPUTU LUNGONZO (Coordinatrice des Projets) (Cellule de gestion)
<ul style="list-style-type: none"> ➤ RVF/CTD (Centre de Traitement des Données) 	<ul style="list-style-type: none"> ○ Cédric Luc TSCHUMBU (Directeur Technique) ○ Jiji DIKPO (Sous-Directeur Chef du CTD)
<ul style="list-style-type: none"> ➤ RVF/Sortie sur le Pool Malebo à bord du baliseur <i>Lomela</i> 	
<p align="center">J6 : Mercredi 31 Janvier 2024</p>	<p align="center">Kinshasa → Matadi</p>
<ul style="list-style-type: none"> ➤ Trajet par la route 	
<p align="center">J7 : Jeudi 01 Février 2024</p>	<p align="center">Matadi → Boma → Banana</p>
<ul style="list-style-type: none"> ➤ Trajet par voie maritime de Matadi à Banana via Boma. À bord Baliseur <i>Singini</i> de la CVM  	<ul style="list-style-type: none"> ○ Augustin LENGU (CVM/Directeur d'exploitation) ○ Jean-Willy MANANGA LUAKA (CVM/ Sous-directeur des Études et Aménagements des Passes) ○ Philippe MBELE (Chef section Balisage Aménagement des passes navigables)  

<p align="center">J8 : Vendredi 02 Février 2024</p>	<p align="center">Boma</p>
<p>➤ CVM</p>  	<ul style="list-style-type: none"> ○ Augustin LENGO ○ Jean-Willy MANANGA LUAKA ○ Ambwa LAMGONGO MONGA (Sous-directeur Dragage) ○ MAKUALA SEMUA (Chef de service Études Hydrographiques) ○ Daniel N'LANDU N'SAKALA (Chef de service Traitement de Données Hydrographiques) ○ Hydrographes
<p>➤ LMC (par téléphone)</p>	<ul style="list-style-type: none"> ○ Timothée NGUNGA (Directeur provincial Matadi)
<p align="center">J9 : Samedi 03 Février 2024</p>	<p align="center">Boma → Matadi → Kinshasa</p>
<p>➤ Division Provinciale TVCD à Matadi</p> 	<ul style="list-style-type: none"> ○ Marc BAZONGA (MTVCD/ province Bas-Kongo)
<p>➤ Trajet par la route</p>	
<p align="center">J10 : Dimanche 04 Février 2024</p>	<p align="center">Kinshasa</p>
<p align="center">J11 : Lundi 05 Février 2024</p>	<p align="center">Kinshasa</p>
<p>➤ IGC</p> 	<ul style="list-style-type: none"> ○ Fidèle BALIBUNO LUGANDA (DG)
<p>➤ CICOS [Commission Internationale du bassin Congo Oubangui Sangha]</p> 	<ul style="list-style-type: none"> ○ Georges GULEMVUGA (Directeur Ressources en Eaux)

<p align="center">J12 : Mardi 06 Février 2024</p>	<p align="center">Kinshasa</p>
<p>➤ Déléation de l'Union Européenne en RDC</p> 	<ul style="list-style-type: none"> ○ Joost MOHLMANN ○ Paul WASUMBUKA (PANAV)
<p align="center">J13 : Mercredi 07 Février 2024</p>	<p align="center">Kinshasa</p>
<p>➤ Japan International Cooperation Agency (JICA)</p> 	<ul style="list-style-type: none"> ○ Léon MWAMBA (Directeur Adjoint des Programmes Secteurs Infrastructures, Énergies et Mines)
<p align="center">J14 : Jeudi 08 Février 2024</p>	<p align="center">Kinshasa</p>
<p>➤ Réunion de restitution avec toutes parties prenantes</p> 	

Annex F : Android application on Mobile – A solution, for the benefit of users, adapted to river navigation in the Congo basin

Preliminary notes:

- this annex was written independently of feedback from the RVF in conjunction with river shipowners as part of the PANAV project (feedback expected);
- what is presented for the river can be applied to the maritime bief where the IHO cartographic standards (ENC) are fully applicable. Smartphones being replaced by visualization tools already available on the market such as PPU: Portable Pilot Unit.

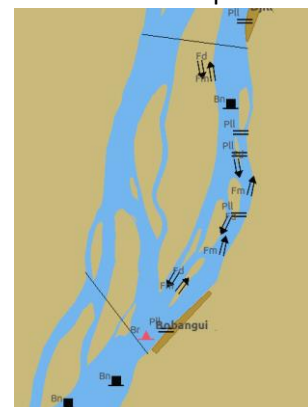
The objective is to make it possible to use electronic river charts (I-ENC: Inland Electronic Navigational Chart) for navigation. These charts are previously developed, maintained and distributed by a Hydrographic and Topographic Data Processing Center (aids to navigation included) on land. Two main points drive the development of a mobile application, adapted to the needs of river navigation in the Congo Basin:

1. Material constraints specific to the navigation area (weak or absence of internet connection during navigation, minimum energy not allowing laptop computers to be integrated on board)
2. Generalization of mobile telephony among users.

Android applications developed for smartphones have the ability to embed navigation maps, or other layers of information (navigation routes) then navigate, even without an Internet connection. It may be interesting (option) for the application to allow sailors to add to this information during navigation: Example: entry of events (sandbank movement, loss of aids to navigation, etc.). Upon returning from these navigations, the captain of the ship can thus share his navigation report with his community (shore center, aids to navigation managers, other users).

Minimum specifications of the application services in preparation for navigation:

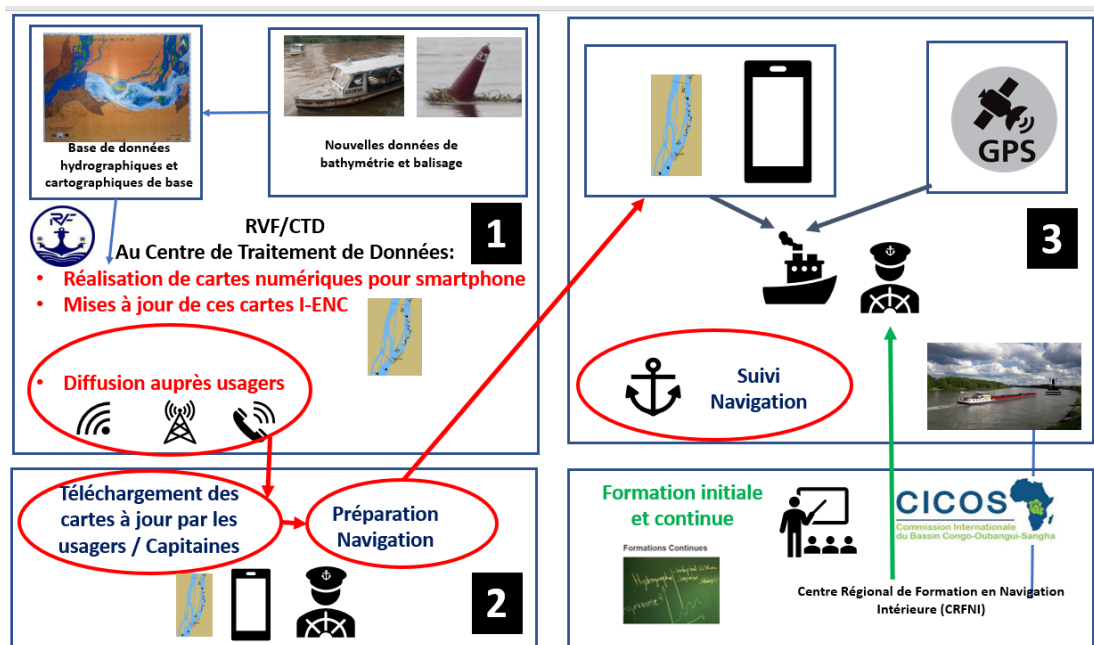
1. Ability to download a base map from standard up-to-date navigation charts (I-ENC) (see point 2).
 - this phase must be done in mission preparation before sailing;
 - any known change in bathymetry or buoyage must be exploited by the chart producer and distributor to update them.
2. Attention. The use of specific local aid to navigation marking (as opposed to classic regulated and standardized river navigation) poses visualization problems. It is therefore important that the application can integrate objects describing this "non-standardized" marking, in particular the capacity to integrate symbology specific to the navigation zone (see example of marking specific to the Ubangui river).



- The application must make it possible to prepare a classic navigation route (WayPoints, LegLines). It is important to offer the possibility in preparation to enter points of interest along this planned route, these points of interest can carry additional text or image information.

Minimum specifications of the application services in **navigation tracking (monitoring)**:

- Being able to use the GPS component of the mobile allowing the positioning of the carrier;
- Be able to record and view the route;
- Be able to calculate navigation alerts based on cartographic information (dangers, shallow water, change in aids to navigation, etc.);
- Being able to enter information allowing a navigation report (shifting sandbank, loss or change of aids to navigation, etc.);
- Measurement tools, for example: distance and/or continuous reading on strategic points (banks, aids to navigation).



Democratic Republic of the Congo / *République Démocratique du Congo*

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

Declared National Tonnage -Tonnage national déclaré -Tonelaje Nacional Declarado	114000 tons (ACL08/2019)
National day -Fête nationale -Fiesta nacional	30 juin
Date ratification IHO Convention -Date ratification Convention OHI -Fecha ratificación Convención OHI	01/01/1970
Remarks on membership -Remarques sur l'adhésion -Comentarios sobre la adhesión	

Last updated : February 2024 Dernière mise à jour : février 2024

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

Direction de la Marine et des Voies Navigables (DMVN) du Ministère des Transports, Voies de Communication et de Désenclavement (MTVCD)

Contact information / Informations de contact / Información de contacto

- National Hydrographer or equivalent - Hydrographe national ou équivalent - Hidrógrafo Nacional o equivalente	- M John AKONDA MABUNDU (Directeur DMVN) - (+243) 810 775 124 - akondajohn3@gmail.com
- Other point(s) of contact - Autre(s) point(s) de contact - Otros punto(s) de contacto	- M Patrick MUSITUMBU ITAKALA (Inspecteur au pool Maritime, Fluvial et Lacustre - DMVN) - (+243) 896 062 812 - patrickmusitumbu2@gmail.com
- Other point(s) of contact - Autre(s) point(s) de contact - Otros punto(s) de contacto	- M Marc BAZONGA BAZA (Chef de Division Provinciale (Kongo Central) des Transports, Voies de Communication et de Désenclavement - MTVCD) - (+243) 898 389 178 - bazongamarc@gmail.com

Agency information / Information sur l'agence / Información sobre la agencia

Date of establishment -Date de mise en place	19 Mars 1982
--	--------------

-Fecha de constitución	
- Top level parent organization - Organisme mère - Organización asociada de nivel superior	Ministère des Transports, Voies de Communication et de Désenclavement (MTVCD)
- Principal functions of the organization or the department - Attributions principales de l'organisme ou du département - Principales funciones de la Organización o el departamento	- D'une part la navigation dans le bief supérieur (Lualaba, lacs et affluents) et le bief moyen (fleuve Congo, rivière Kasai) en lien avec la Régie des Voies Fluviales (RVF) - D'autre part la navigation dans le bief inférieur ou maritime du fleuve Congo (estuaire) en lien avec la Congolaise des Voies Maritimes (CVM)

La Régie des Voies Fluviales (RVF)

Navigation dans le bief supérieur (fleuve Congo = Lualaba, après Kisangani jusqu'à la source - les lacs et autres affluents) et le bief moyen (fleuve Congo de Kinshasa à Kisangani, rivières : Kasai, Kwilu et Kwango)

- Top level parent organization - Organisme mère - Organización asociada de nivel superior	Ministère des Transports, Voies de Communication et de Désenclavement (MTVCD)
- Point(s) of contact - Point(s) de contact - Punto(s) de contacto	- M Cédric Luc TSCHUMBU (Directeur Technique) - (+243) 812 230 502 - cedricluetschumbu@yahoo.fr
- Principal functions of the organization or the department - Attributions principales de l'organisme ou du département - Principales funciones de la Organización o el departamento	- Aménagement et entretien des voies de navigation intérieures. Cela comprend : <ul style="list-style-type: none"> o les études hydrographiques, hydrologiques o les travaux de balisage o l'exécution des travaux bathymétriques o l'établissement des cartes hydrographiques et des albums de navigation ;
Total number of paper charts published -Nombre total de cartes papier publiées -Número total de cartas de papel publicadas	69 cartes figurent dans l'album de navigation du fleuve Congo de Kinshasa à Kisangani (1 734 km). Cet album est réalisé au Centre de Traitement des Données « CTD » de la RVF (hydrographiques, hydrologiques et cartographiques) ;
Number of ENC cells published -Nombres de cellules ENC publiées -Número de células ENC publicadas	
Detail of surveying vessels/ Aircraft -Détail des bâtiments hydrographiques/aéronefs -Detalle de buques hidrográficos/Aeronaves	La RVF dispose de baliseurs et canots hydrographiques

Congolaise des Voies Maritimes (CVM)
Navigation dans le bief inférieur ou maritime du fleuve
Congo (estuaire)

<ul style="list-style-type: none"> - Top level parent organization - Organisme mère - Organización asociada de nivel superior 	Ministère des Transports, Voies de Communication et de Désenclavement (MTVCD)
<ul style="list-style-type: none"> - Point(s) of contact - Point(s) de contact - Punto(s) de contacto 	<ul style="list-style-type: none"> - Jean-Willy MANANGA LUAKA (Sous-directeur des Études et Aménagements des Passes) - (+243) 808 854 396 - jeanwillyoscar@gmail.com
<ul style="list-style-type: none"> - Principal functions of the organization or the department - Attributions principales de l'organisme ou du département - Principales funciones de la Organización o el departamento 	<ul style="list-style-type: none"> - Entretien et aménagement de la Voie Maritime longue de 150 Km entre Matadi et l'embouchure y compris la Mer Territoriale (Façade Atlantique de 40 Km) - À ce sujet la CVM exécute des : <ul style="list-style-type: none"> o Travaux hydrographiques o Travaux de balisage
<ul style="list-style-type: none"> Total number of paper charts published -Nombre total de cartes papier publiées -Número total de cartas de papel publicadas 	<ul style="list-style-type: none"> - Deux types de cartes sont publiées : <ul style="list-style-type: none"> o Celles de la CVM o Celles de l'UKHO et du Portugal. - Concernant l'UKHO : <ul style="list-style-type: none"> o 306 (INT 2814) au 1 : 350 000 o 658 (INT 2511) au 1 : 50 000 o 657 (INT 2512) au 1 : 50 000 et 1 : 12 500
<ul style="list-style-type: none"> Number of ENC cells published -Nombres de cellules ENC publiées -Número de células ENC publicadas 	<ul style="list-style-type: none"> - Uniquement par l'UKHO <ul style="list-style-type: none"> o GB300306 au 1 : 180 000 o GB400658 au 1 : 45 000 o GB GB400657 (+ B et C) au 1 : 45 000 et 1 : 12 000
<ul style="list-style-type: none"> Detail of surveying vessels/ Aircraft -Détail des bâtiments hydrographiques/aéronefs -Detalle de buques hidrográficos/Aeronaves 	La CVM dispose de baliseurs et vedettes hydrographiques

Annex H : Marine cartography - Charting (paper and electronic)

Sources:

UKHO	https://www.amnautical.com/pages/paper-chart-folio-catalogue
Portugal	Catalogo Cartas Atualizacao 30abril2023.pdf https://loja.hidrografico.pt/sdm_downloads/catalogo-de-cartas-e-publicacoes-nauticas/
France	https://diffusion.shom.fr/pro/catalogues
IC-ENC	https://ic-enc.maps.arcgis.com/apps/webappviewer/index.html?id=b448351c8b19429881d1af16cfa6ecf6

Annexe H-1 : General

<p align="center">Cartes papier / Paper charts UKHO</p>	<p align="center">Cartes papier / Paper charts Portugal</p>
<p align="center">Cartes papier / Paper charts France</p>	

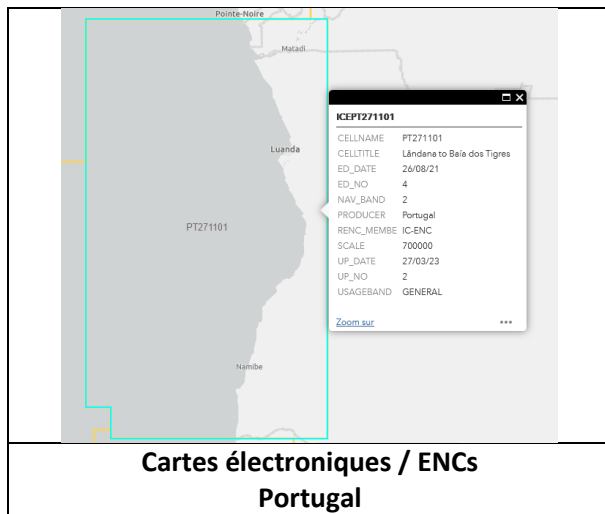
Cartes papier / Paper charts

La région est principalement couverte par la carte INT 2089 produite en particulier par :

The region is mainly covered by the INT 2089 chart produced in particular by:

	INT	Titre/Title	Echelle/Scale
United Kingdom : 311	2089	Gamba to Luanda	1 : 1 000 000
Portugal : 72101	2089	Gamba à Luanda	1 : 1 000 000
France : 7791	2089	De Gamba à Luanda	1 : 1 000 000

Cartes électroniques / ENC's



La région est couverte par :

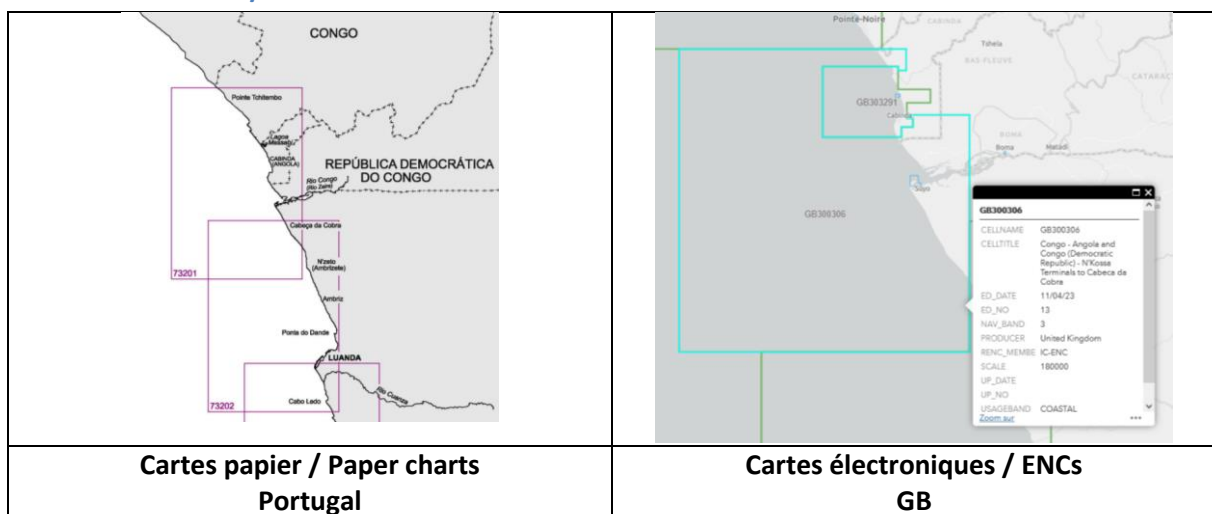
The region is covered by:

CELLNAME	CELLTITLE	SCALE	USAGEBAND
PT271101	Lândana to Baía dos Tigres	700 000	GENERAL

Note : l'ENC GB200311 ne couvre pas la RDC (mais la carte GB 311 le fait)

Note: ENC' GB200311 not covering DRC (but Chart GB 311 do)

Annexe H-2 : Côtier / Coastal



Cartes papier / Paper charts

La région est principalement couverte par la carte INT 2814 produite en particulier par :

The region is mainly covered by the INT 2814 chart produced in particular by:

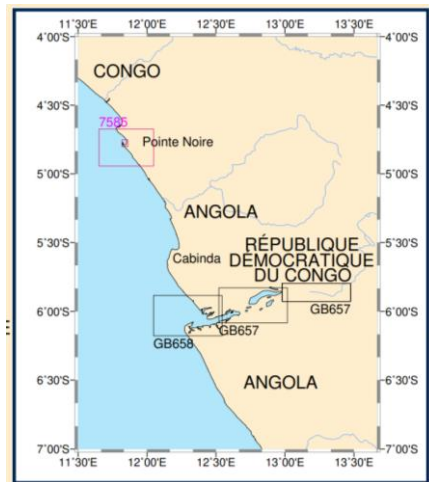
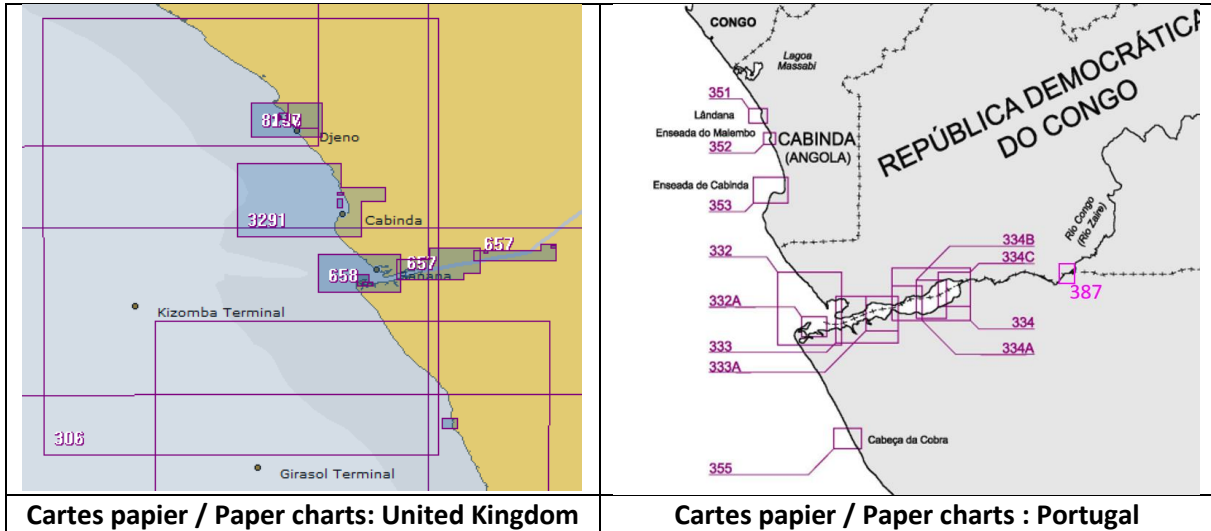
	INT	Titre/Title	Echelle/Scale
United Kingdom : 306	2814	Pointe Tchitembo to Cabeça da Cobra	1 : 350 000
Portugal : 73201	2814	Pointe Tchitembo à Cabeça da Cobra	1 : 350 000
France : néant / No			

Cartes électroniques / ENC's

CELLNAME	CELLTITLE	SCALE	USAGEBAND
GB300306	Congo - Angola and Congo (Democratic Republic) - N'Kossa Terminals to Cabeça da Cobra	180 000	COASTAL

Annexe H-3: Approches et Ports / Approach and Harbour

Cartes papier / Paper charts



Extrait du catalogue du Shom / Shom's catalogue

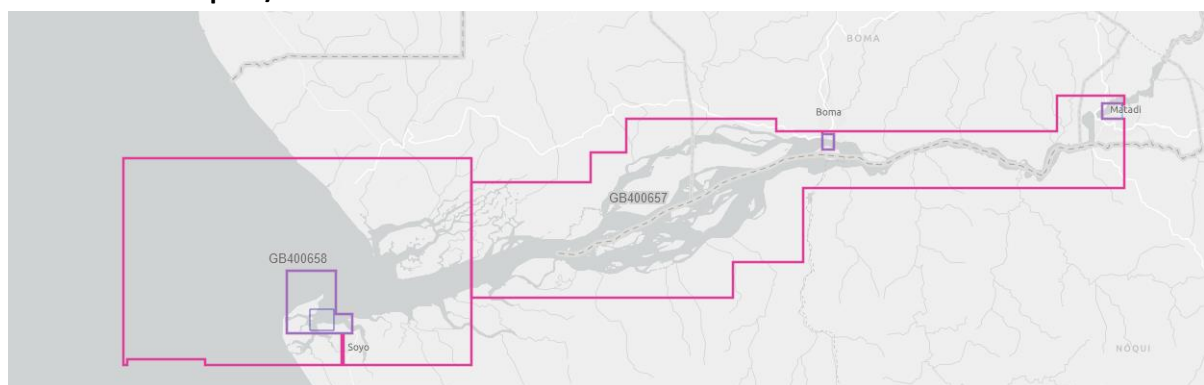
La région est principalement couverte par les cartes INT 2511 (Schemed) et INT 2512 (Produced) produite en particulier par :

The region is mainly covered by the INT 2511 (Schemed) and INT 2512 (Produced) charts produced in particular by:

	INT	Titre/Title	Echelle.Scale
United Kingdom :			
658	2511	Entrance to River Congo	1 : 50 000
657	2512	River Congo - Ponta da Cafumbila to Matadi	1 : 50 000
657-A		Continuation to Matadi	1 : 50 000
657-B		Boma	1 : 12 500
657-C		Matadi	1 : 12 500

Portugal :			
332		Foz ao Fuma-Fuma (Rio Zaire)	1 : 40 000
332-A		Baía de Diogo Cão (Rio Zaire)	1 : 15 000
333		Fuma-Fuma à Lucala (Rio Zaire)	1 : 40 000
333-A		Pendi à Lucala (Rio Zaire)	1 : 20 000
334		Lucala à Pedra do Feitiço (Rio Zaire)	1 : 40 000
334-A		Lucala à Ponta Quiombe (Rio Zaire)	1 : 20 000
334-B		Ponta Quiombe à Ponta das Palmeiras (Rio Zaire)	1 : 20 000
334-C		Ponta das Palmeiras à Pedra do Feitiço (Rio Zaire)	1 : 20 000
387		Porto de Noqui (Rio Zaire)	1 : 1 000
France :	néant/No		

Cartes électroniques / ENCs



CELLNAME	CELLTITLE	SCALE	USAGEBAND
GB400658	Angola and Congo (Democratic Republic) - Entrance to River Congo	45000	APPROACH
GB400657	Ponta da Cafumbila to Matadi	45000	APPROACH
GB50657B	Africa - West Coast - River Congo - Boma	12000	HARBOUR
GB50657C	River Congo - Matadi	12000	HARBOUR