

Direction des missions institutionnelles  
et des relations internationales  
Division relations extérieures

BREST on April 29th 2024

N°030/Shom/DMI/REX/NP

## NATIONAL REPORT

- SUBJECT** : France national report to the 23<sup>rd</sup> Conference of the North Indian Ocean Hydrographic Commission (NIOHC).
- APPENDIX** : one appendix.

### 1. HYDROGRAPHIC OFFICE: GENERAL

Shom is pursuing the achievement of its different commitments based on the National Maritime & Littoral Strategy and the Strategic Review of Defence and National Security according to a 4-year target and performance contract between Shom and the French State. The current target and performance contract came into effect on January 1, 2021 for the period 2021-2024. The next contract for the period 2025-2029 is in preparation.

In addition to that, survey works are being conducted according to the prioritized 4-years survey plan for waterways under French jurisdiction.

Detailed information to update IHO Publication P-5 (Yearbook) has been submitted using the online system.

This national report is submitted by RADM Laurent Kerléguer, French national hydrographer and Shom's Director General ([laurent.kerleguer@shom.fr](mailto:laurent.kerleguer@shom.fr)).

### 2. SURVEYS

#### 2.1. COVERAGE OF NEW SURVEYS

Since the previous NIOHC Conference (February 2023), due to re-scheduling, Shom has not conducted any new survey in the area.

Survey campaigns are planned by Shom on a regular basis in Djibouti to improve the navigational safety. Their achievement level depends on the authorizations received from the concerned Coastal States.

The next surveys in the region might be planned in 2025 on the occasion of the deployment of the RV *Beautemps-Beaupré* in the Indian Ocean. Surveys could be carried out in particular in the waters of the Republic of Djibouti for which France officially assumes SOLAS responsibility within the framework of an arrangement established between the 2 countries.

## 2.2. LIDAR SURVEYS

NTR.

## 2.3. NEW TECHNOLOGIES AND/OR EQUIPMENT

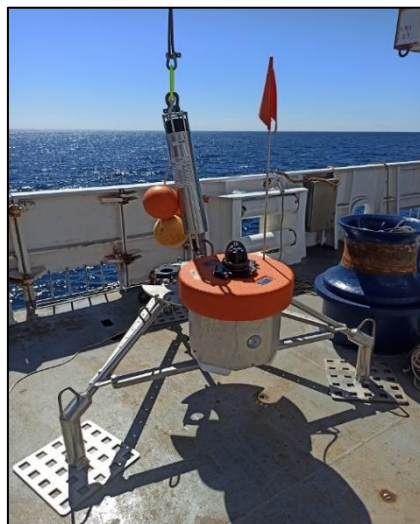
### **Gliders**

Following the preparatory phase for the replacement of the hydro-oceanographic fleet (CHOF project), Shom has invested in 2 gliders to increase its collected data. The first glider will be mounted with CTD, O<sub>2</sub>, PAR, ADCP, Chlorophyll, CDOM and Backscattering sensors. The second glider will be mounted with CTD and hydrophone sensors.

### **New frame mooring**

Involved in ecological issue, Shom developed a frame mooring called CATRINE with no loss of deadweight at the sea bottom. Usable until 150 meters depth, the frame mooring includes an acoustic release connected to a 200 meters Dynema rope stored in an aluminum canister during the deployment.

At the end of the deployment (after weeks or months at the bottom of the sea), the acoustic release is activated. The orange buoyancy goes up to the surface unwinding the rope stored in the canister. Arrived at the sea surface, operators need to recover the orange buoyancy and the Dynema rope. Using an electric winch on board, operators wire the 200 meters rope to recover the frame mooring and the instrumentation.



*Fig. 1 – CATRINE frame mooring with its orange buoyancy above the canister*

### **Deployable Hydrographic System**

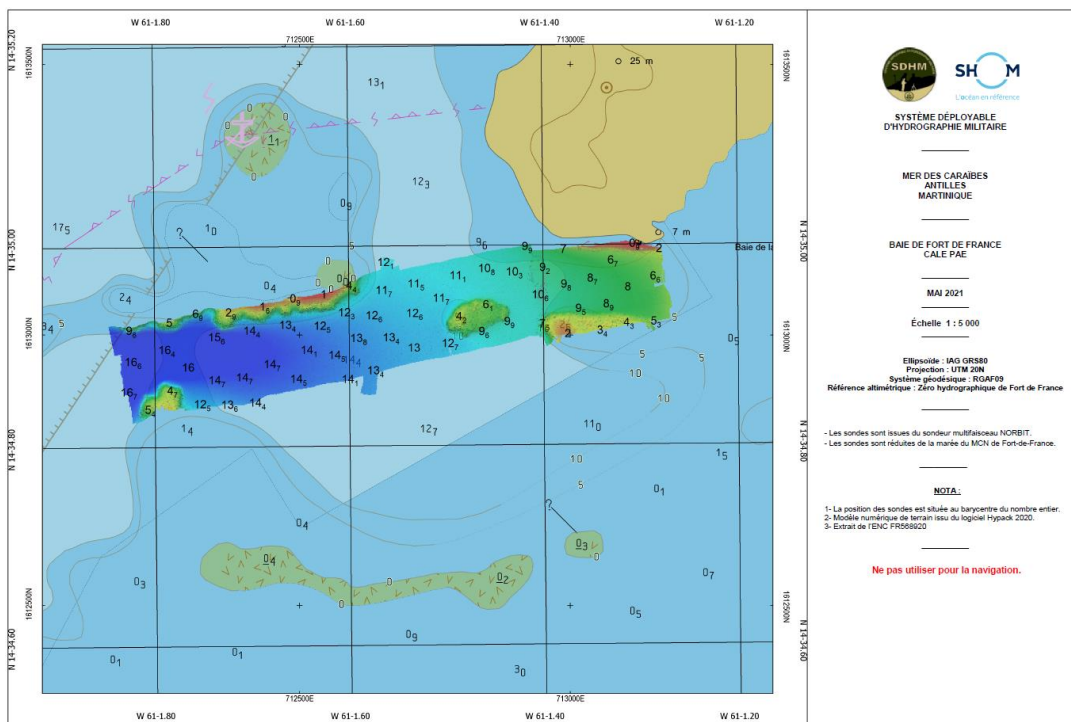
Taking advantage of the reducing size of multibeam echo sounder, Shom developed a portable Hydrographic system usable with small boats (inflatable).

The system is composed of 5 components: an electronic watertight case, an energy watertight case, a rugged computer powered with Hypack, a sidescan sonar and a multibeam echo sounder with integrated inertial and GNSS receiver.

This efficient system has a maximum range of 160 meters and a resolution of 0.9°\*0.9° at 400 kHz.



*Fig. 2 – Deployable Hydrographic System*



*Fig. 3 – Final Product obtained with the Deployable Hydrographic System - Fort de France Bay Martinique*

## 2.4. NEW SHIPS

NTR.

## 2.5. CROWDSOURCED AND SATELLITE-DERIVED BATHYMETRY - NATIONAL POLICY

### Crowdsourced bathymetry – CSB

In accordance with the IHO publication B-12, crowdsourced bathymetry is the practice of simultaneously recording the vessel's position and depth measurement, made **with standard navigation instruments, on board a non-specialist vessel during its routine maritime operations**. This recorded data is intended to be provided free of charge to the relevant organisation for consideration and, subject to validation, for public dissemination.

An instruction of the Prime Minister (published 22 November 2022) sets the French national policy regarding crowdsourced bathymetry

([https://www.gouvernement.fr/upload/media/organization/0001/01/sites\\_default/files/content/piece-jointe\\_2022\\_11\\_20221122\\_sgmer\\_instruction-bathymetrie-participative.pdf](https://www.gouvernement.fr/upload/media/organization/0001/01/sites_default/files/content/piece-jointe_2022_11_20221122_sgmer_instruction-bathymetrie-participative.pdf)).

Crowdsourced bathymetry is authorised in the waters under French sovereignty of jurisdiction, subject to the definition and constraints imposed by the instruction. Data from crowdsourced bathymetry in French waters have to be transmitted as a priority to Shom, or alternatively to one of the following trusted third parties:

- the European Marine Observation and Data Network EMODnet, via its "Data Ingeenering" portal EMODnet, via its Data Ingestion Portal (<https://submission.emodnetingestion.eu/>);
- the IHO Data Centre for Digital Bathymetry (DCDB - <https://www.ngdc.noaa.gov/iho/>).

The CSB data are licensed under the Attribution 4.0 International (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/deed.fr>) or Attribution 3.0 IGO (CC BY 3.0 IGO) (<https://creativecommons.org/licenses/by/3.0/igo/deed.fr>), in accordance with the IHO Guide to Crowdsourced Bathymetry (IHO Publication B-12).

### Satellite-derived bathymetry – SDB

The satellite-derived bathymetry (SDB) has been used since 1987 by Shom to complement traditional surveys (acoustic sounding surveys) initially to produce nautical charts in the Pacific region (available online)

([https://services.data.shom.fr/geonetwork/srv/eng/catalog.search#/metadata/TRAITEMENT\\_IMAGE\\_SPATIOCARTE\\_MARINE.xml](https://services.data.shom.fr/geonetwork/srv/eng/catalog.search#/metadata/TRAITEMENT_IMAGE_SPATIOCARTE_MARINE.xml)).

In 2019, Shom initiated a research and development project for a new SDB chain, the Bathysat project, aimed at updating the processing chain in service to improve its performance. In particular, by using algorithms based on physics rather than on statistical approaches, the aim is to decrease the need of bathymetric observations when carrying out reconnaissance surveys using SDB.

Initial production tests carried out in New Caledonia and French Polynesia have demonstrated that the solution is capable of generating consistent coastal bathymetric data without the need to carry out measurements or collect on site data. Because of their spatial and vertical resolution, these products are suitable for field reconnaissance (to support survey planning) and for forcing sea state models, when no data from conventional systems is available.

Another essential property for Shom is that this chain is not a 'black box' and is perfectly controlled internally, which is essential in particular for qualifying measurements. This new chain is currently being industrialised for operational use, scheduled for 2025.

## 2.6. CHALLENGES AND ACHIEVEMENTS

In foreign areas where France assumes responsibility for marine cartography, Shom must collect all nautical information and the results of surveys carried out, as long as this information is relevant to navigation safety.

It is *imperative, for the safety of navigation*, that the data (*quays topography, harbor bathymetry and nautical information*) resulting from port redevelopment work as well as that resulting from maintenance dredging be transmitted to Shom for updating of nautical charts and nautical documents (*in compliance with specifications A-402.1 and B-635.4 of standard S-4*).

## 3. NEW CHARTS & UPDATES

### 3.1. ENC COVERAGE, GAPS AND OVERLAPS

As of 1<sup>st</sup> April 2024, Shom has produced 840 ENCs, of which 8 ENCs within region J.

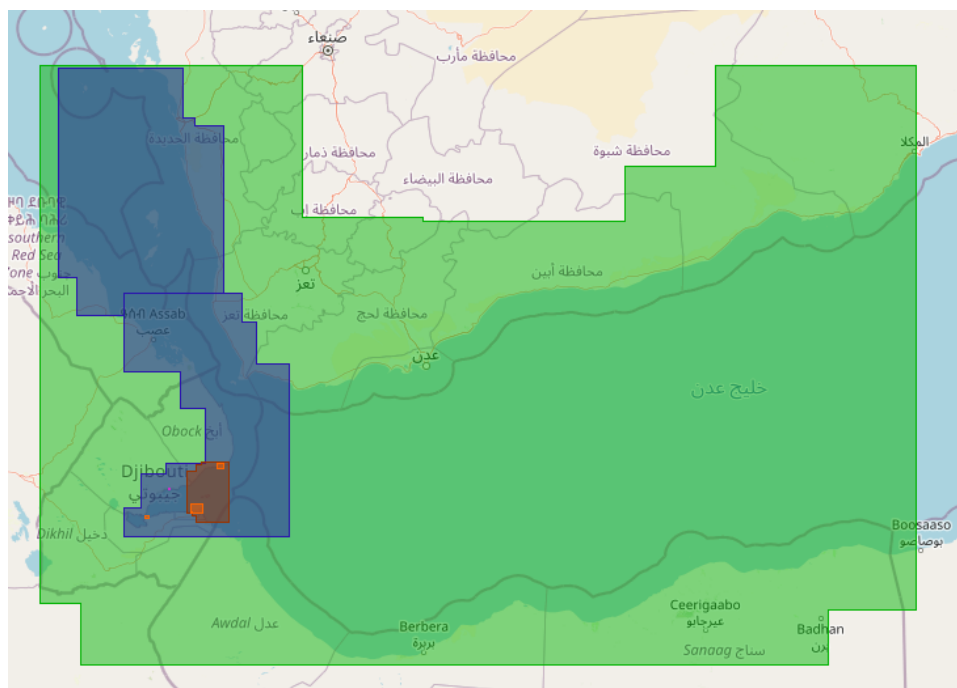
The full collection should eventually reach 900 ENCs.

In line with the WEND recommendations and guidelines, France produces its small scale ENC cells as closely as possible to INT chart schemes.

The current status of ENC production in the region J is detailed in the table below (*changes in red*):

Usage Band	Produced Cells	Planned Cells	Percentage
1	0	0	N/A
2	1	1	100%
3	2	2	100%
4	1	2	50%
5	3	10	40%
6	1		
<b>Total</b>	<b>8</b>	<b>15</b>	<b>53%</b>

The following figure is extracted from the online PRIMAR catalogue (<http://www.primar.org>) showing Shom ENC coverage within the NIOHC (region J) area:



*Fig.4 – Region J - Shom's ENC production*

ENC cells produced since the last conference are detailed hereafter:

Number	Scale 1 :	Title	Comment
FR67519A	8 000	<i>Mouillage de Tadjoura</i>	New Edition

ENC cells planned for 2024 or later are listed below:

Number	Title
FR575460	<i>Port de Djibouti</i>
FR478480	<i>Ouest du golfe de Tadjoura</i>
FR57848B	<i>Entrée du Ghoubbet El Kharâb – Mouillage des Boutres (replaces FR57519B)</i>
FR57848C	<i>Port du Ghoubbet</i>
FR57849A	<i>Baie de Doraleh et de Khôr Ambâdo</i>
FR57849B	<i>Terminal de Damerjog</i>
FR57849C	<i>Port de Tadjoura (replaces FR67519A)</i>

### 3.2. ENC DISTRIBUTION METHOD

All French ENCs (in S-63 encrypted format) are made available to distributors through the PRIMAR RENC. Shom participates, along with other hydrographic services, in the coordination work of the RENC (IC-ENC and PRIMAR).

France supports the work plan of the WEND working group to improve the implementation of the WEND principles.

### 3.3. RNC

NTR.

### 3.4. INT CHARTS

All INT charts under responsibility of Shom in the region J have been produced, as detailed in the following table:

Scale	Produced INT charts	Planned INT charts	Percentage
Small (<1/1 000 000)	0	0	N/A
Medium	3	3	100%
Large (>1/100 000)	2	2	100%
<b>Total</b>	<b>5</b>	<b>5</b>	<b>100%</b>

No INT chart has been produced since the last conference:

INT	Scale 1:	Title	Comment

### 3.5. NATIONAL PAPER CHARTS

No national chart has been produced since the last conference, and two is planned for 2024-2025 designed to cover the western part of the Gulf of Tadjoura at scale 1: 50 000:

- FR7848 – Ouest du golfe de Tadjoura
- FR7849 – Ports du golfe de Tadjoura

These future charts have been submitted as new INT charts to the NIOHC ICCWG.

### 3.6. OTHER CHARTS, E.G. FOR PLEASURE CRAFT

Shom has set up a dedicated team working on the implementation of the S-101 (with the aim of switching all production to this new format by the time the first ECDIS S-100 is available). In particular, the "S-100 across the Channel" project, in partnership with the UKHO, from S-101 ENC production to sea trials, is a risk assessment on the dual fuel mode of ECDIS.

The Shom project "Unified Cartographic Source" will review methodology (included automation) to produce French charts with a data-centric approach and the principle of "single charting scale per area". This project will include a homogenisation of chart scales by Usage Band and a review of all the French charts to eliminate discontinuities between products: Shom plans to start the production mid-2024.

Shom provides georeferenced marine charts in GeoTiff and S-57 format. These digital marine charts are available through Shom's online store <http://diffusion.shom.fr> under various licenses<sup>1</sup> according to the purpose of use. These data can be used with GIS or cartographic software for commercial or private purposes.

A S-57 license<sup>2</sup> allows unlimited download of updated versions for 12 months from the date of purchase.

### 3.7. CHALLENGES AND ACHIEVEMENTS

NTR.

## 4. NEW PUBLICATIONS & UPDATES

### 4.1. NEW PUBLICATIONS

Sailing directions:

L7 : République de Djibouti, détroits de Bab-el-Madeb (oct 2023);

L9 : îles de l'Océan Indien (partie Sud, Terre Adélie (nov 2022).

### 4.2. UPDATED PUBLICATIONS

Sailing directions, light and fog signal books and radio signal books are no longer published in print form. They are updated on a weekly basis and distributed via the online Shom distribution space ([diffusion.shom.fr](http://diffusion.shom.fr)). Mariners who subscribe to these books are alerted of corrections by e-mail and by the Notice to Mariners (GAN).

### 4.3. MEANS OF DELIVERY

Nautical publications are available in digital format only (pdf files) on Shom's online shop (<http://diffusion.shom.fr>).

### 4.4. CHALLENGES AND ACHIEVEMENTS

NTR.

## 5. MSI

### 5.1. EXISTING INFRASTRUCTURE FOR MSI DISSEMINATION

Shom's notices to mariners (GAN) are exclusively available under digital formats on Shom website: <http://diffusion.shom.fr/gan>.

MSI Point of contact at Shom:

M. Philippe Egelé  
Head of Team  
French Hydrographic Office  
13, rue du Chatellier – CS 92803 - 29228 BREST CEDEX 2 – FRANCE  
Tel : + 33 (0) 256 31 21 92  
Email: [infonaut-d@shom.fr](mailto:infonaut-d@shom.fr)

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<sup>1</sup>Internal reuse, commercial reuse, documentary use or end user.

<sup>2</sup> Each license allows internal reuse of the data for up to 5 workstations. For more information, contact [bps@shom.fr](mailto:bps@shom.fr).



## 5.2. STATISTICS ON WORK OF THE NATIONAL COORDINATOR

See Appendix.

Shom plays a control and coordination role of local and coastal warnings issued by its national delegated coordinators (maritime zone commands mentioned in Appendix).

## 5.3. NEW INFRASTRUCTURE IN ACCORDANCE WITH GMDSS MASTER PLAN

There is no NAVTEX station cover for French overseas territories, MSI warnings are broadcast through SafetyNet network.

Hereafter are listed the coordinates of the French overseas territories POC for NAVAREA VIII:

AREA	COUNTRY	NAME	TELEPHONE	FACSIMILE	EMAIL
VIII	French Areas (La Reunion Island)	Commandant de Zone Maritime Sud Océan Indien	+262 (0)2 62 93 53 54		<a href="mailto:emia-saint-denis.permanence-ops.fct@intradef.gouv.fr">emia-saint-denis.permanence-ops.fct@intradef.gouv.fr</a>

## 5.4. CHALLENGES AND ACHIEVEMENTS

### French national nautical information platform - PING

France has been operating its national nautical information platform called PING (<https://portail.ping-info-nautique.fr/>) since April 10, 2024 in mainland France and in NAVAREA II area.

This platform aims to digitize nautical information as much as possible to promote wide dissemination and integration into user systems (ship navigation systems, shore services systems, user systems, etc.).

The platform has a portal for humans and programming interfaces (API) for systems, with 3 functional modules:

- production and distribution of navigational warnings,
- transmission of source information by maritime services and users to contribute to nautical information,
- production and dissemination of maritime geo-regulations in a spatialized form.

A mobile application named Nav&Co is also associated with the platform.

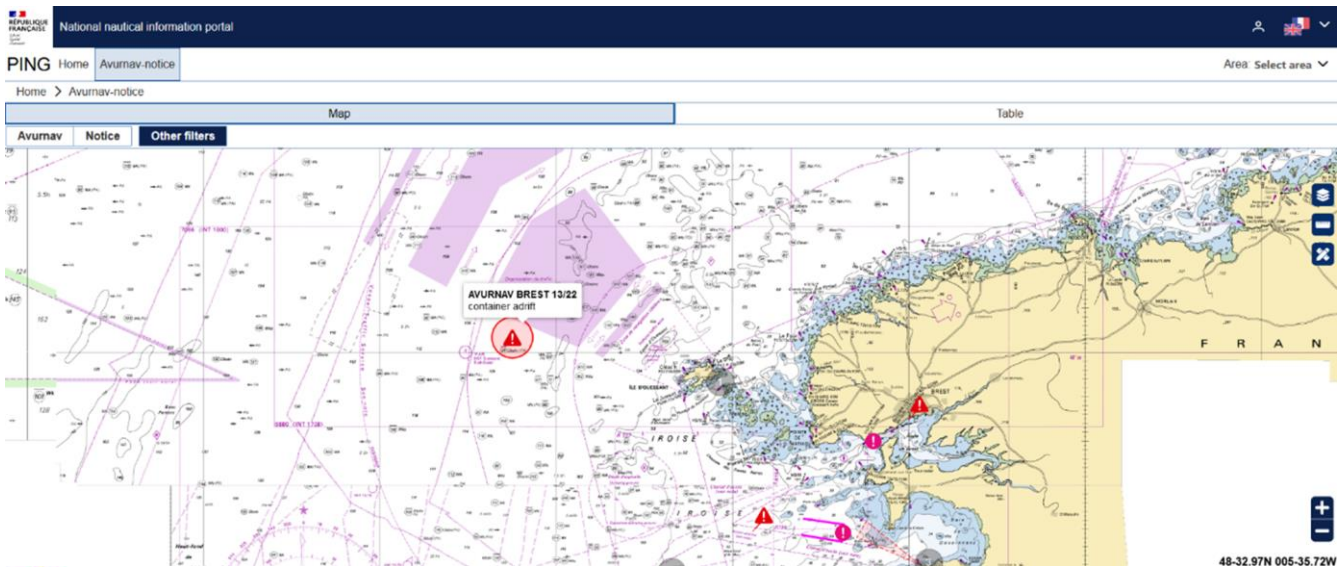
The production and digital dissemination of navigation warnings will use, when the firsts S-100 compatible ECDIS will be available, the IHO S-124 Navigational warnings standard, while ensuring compatibility with the current NAVTEX and EGC systems.

The project is supported by the European Maritime Affairs and Fisheries Fund and the navigation warnings module has been developed and tested in the framework of the European Interreg MED OSMOSIS project.

For the time being, PING is based on the draft S-124 standard. It will be aligned with the first edition of the S-124 standard in the next future.

PING will be deployed in the French overseas territories in 2025.

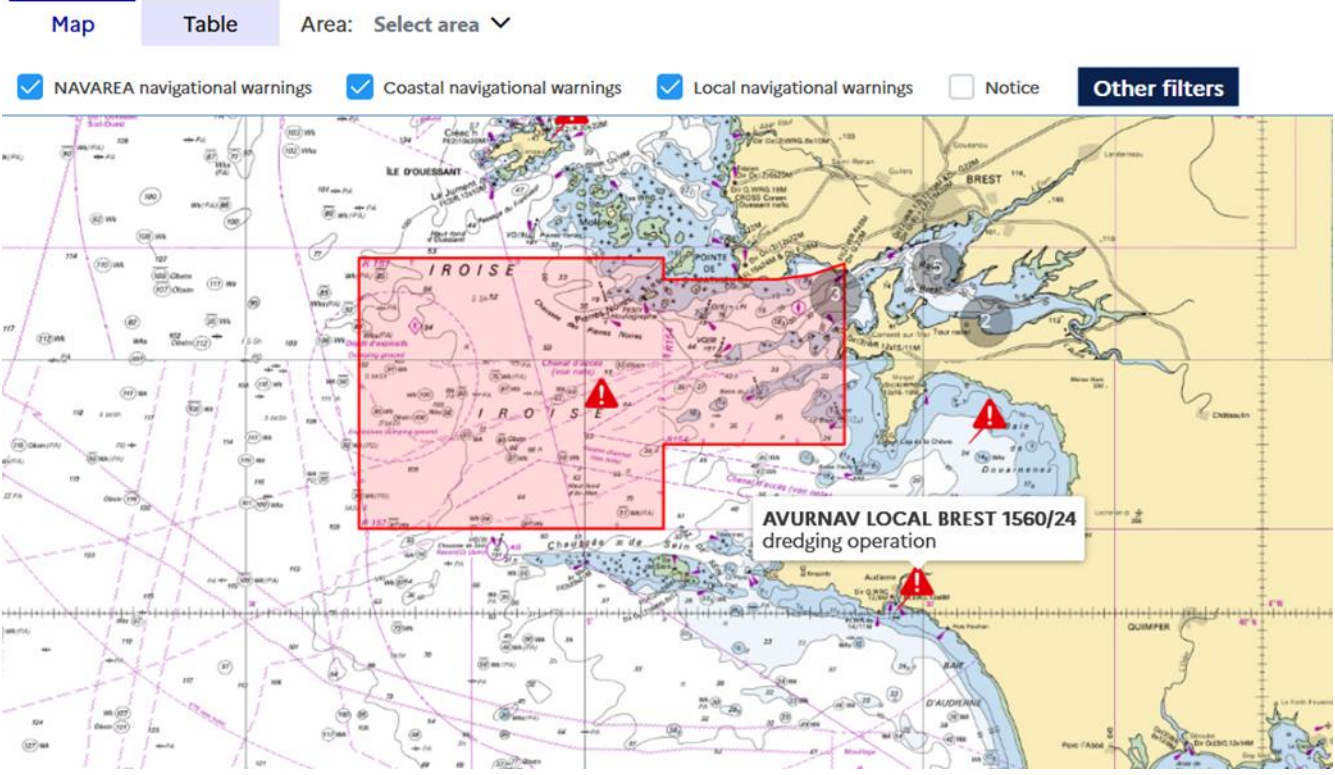
The source code of PING will be open source as soon as PING is aligned with the S-124 ed. 1.



**PING - The national nautical information platform**

Home | [Warnings and notices](#) | [Regulations](#) | [My subscriptions](#) | [My contributions](#)

Home > [Warnings and notices](#)



*Fig.5 – Views of the PING portal - Viewing navigation warnings*

**6. C-55 – LATEST UPDATES**

The table with the latest information to update IHO Publication C-55 (Status of Hydrographic Surveying and Charting Worldwide) regarding region J area have been provided using the online system on 25 May 2022:

Survey Status <b>Updated: December 2023</b>		Depth < 200m			Depth > 200m		
		A	B	C	A	B	C
J	Djibouti	32.9 %	54.4 %	12.6 %	97.9 %	0.3%	1.8 %

Charting Status <b>Updated: April 2024</b>		Small (<1 M)			Medium (1M < / < 100 000)			Large (> 100 000)			Metric	WGS84
		A	B	C	A	B	C	A	B	C		
J	Djibouti	100	0	NA	100	0	100	81	0	50	100	100

C-55 values for survey status (top table) and charting status (down table). Updated values are highlighted in red

## 7. CAPACITY BUILDING

### 7.1. OFFER OF CAPACITY BUILDING

Shom school offers FIG-OHI-ACI (category B) courses in hydrography and marine cartography. These courses are given in French and are open to French-speaking foreign candidates (depending on available places). The training offer is presented on the Shom website:

<https://www.shom.fr/fr/nos-activites/formation>

Some training modules are provided within the framework of the French-speaking hydrography association (AFHy: <http://www.afhy.fr/>) and are open to its members.

A training course in hydrography accredited in category A FIG-OHI-ACI is provided by ENSTA Bretagne

(<https://www.ensta-bretagne.fr/index.php/option-hyo-hydrographie-et-oceanographie/>).

**L'école du Shom**  
Des formations de référence en hydrographie et sciences de la mer

**Formations longues**

- L3 BS HYDRO**  
Licence / Brevet supérieur d'hydrographe  
13 officiers marins/civils étrangers  
10 mois pour civils, 14 mois pour officiers marins  
Sur dossier  
Certification internationale de technicien hydrographe
- C SYSRES-HOM**  
Certificat d'administrateur Systèmes et réseaux d'hydrographie et de météorologie  
2 à 5 officiers marins  
9 mois  
Sur dossier  
Certificat délivré par la marine nationale
- CSUP-HYDRO**  
Certificat Supérieur d'hydrographe  
2 à 3 officiers marins hydrographes  
4 mois  
Sur dossier  
Certificat délivré par la marine nationale
- PRÉPARATEUR CARTO**  
Technicien préparateur en cartographie marine  
2 à 3 civils / étrangers  
9 mois  
Sur concours TSEF  
Certification internationale de cartographie marine

**Homologations et équivalences**  
Homologations en catégorie B par le comité international FIG/OHI/ACI :  
- BS Hydro  
- Technicien préparateur en cartographie marine  
Enregistrement au niveau II au RNCP\*\* de la formation CSUP Hydro pour l'obtention du titre de « Superviseur hydrographe ».

**Plateforme e-learning**  
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**Catalogue de l'offre de formation**  
Formations courtes  
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Formations longues

www.shom.fr

Logos: FIG, OHI, CACP, AFHY

Fig. 6 – Courses and training provided at the Shom hydrographic school (source: shom.fr)

One petty officer from Indonesia (PUSHIDROSAL) is currently completing the Shom Cat. B course in cartography in Brest (January. 2024 to August 2024).

## 7.2. TRAINING RECEIVED, NEEDED, OFFERED

NTR.

## 7.3. PROJECT MANAGEMENT ASSISTANCE FOR THE CONSTRUCTION OF HYDRO-OCEANOGRAPHIC VESSELS

Shom has a recognized know-how in the construction of hydro-oceanographic vessels (from 8m launches to 100m vessels). It masters the entire process from the expression of needs to the implementation of systems. It puts its expertise at the service of shipyards, within the framework of new constructions or modernizations for:

- Studies to define, on the basis of an expression of need, the complete specifications in terms of hydro-oceanographic equipment (including computers), as well as the fitting out of premises and scientific spaces of hydro-oceanographic ships. Shom provides intellectual services such as the drafting of the metrological survey essential to the proper integration and control of the systems, the specification of the batches of spare parts adapted to the ship's missions, the interface plans, the acceptance book and the ship's logbook (in its field of competence).
- Equipment acceptance and integration: supervision of equipment integration (mechanical, interfacing, metrology, etc.), acceptance tests in the factory, in port and at sea.
- Training and assistance: training of personnel who will implement the equipment, but also of personnel who will maintain the systems, transfer of skills, handling of warranty calls after delivery of the vessel to the end customer. A Shom hydrographic engineer has been deployed to the Nigerian Naval Hydrographic Office for two years for the training on the new French-built hydrographic vessel Lana.



*Fig. 7 – Nigerian hydrographic ship Lana built by the French shipyard OCEA with the support of Shom (Source: OCEA)*

#### 7.4. STATUS OF NATIONAL, BILATERAL, MULTILATERAL OR REGIONAL DEVELOPMENT PROJECTS WITH HYDROGRAPHIC COMPONENT

For the countries benefiting from Shom support to meet their hydrographic services obligations spelled out by the SOLAS convention, France fosters a mechanism of gradual transfer of responsibilities through State-to-State administrative arrangements. This mechanism relies on training at Shom facilities and the formalisation of the respective responsibilities for maritime safety information, hydrographic and charting activities.

#### 7.5. DEFINITION OF PROPOSALS AND REQUESTS TO THE IHO CBSC

NTR.

### 8. OCEANOGRAPHIC ACTIVITIES

#### 8.1. GENERAL

NTR.

#### 8.2. GEBCO/IBC'S ACTIVITIES

In the waters under French jurisdiction of the NIOHC region, Shom's bathymetric data are accessible:

- through the *EMODnet Bathymetry* portal (<http://www.emodnet-bathymetry.eu/>)
- in the form of bathymetric DTMs for the coastline and the shoreline on Shom's dissemination space (<http://diffusion.shom.fr/pro/risques/bathymetrie.html?p=1>)
- as bathymetric batches on Shom's dissemination space (<http://diffusion.shom.fr/pro/amenagement/bathymetrie/lots-bathy.html>)

Data on transits in French and international waters were provided to IHO DCDB and for integration into the GEBCO grid in 2018.

The survey coverage and associated metadata available on the IHO DCDB site are provided via the *EMODnet Bathymetry* portal supported by the European Union. The last update of all these bathymetric resources was performed in December 2022.

#### 8.3. TIDE GAUGE NETWORK

Shom is the national coordinator and reference authority for the observation of the sea level, managing and issuing the resulting data. This mission is carried out under the REFMAR programme. All real time and processed tide gauge measurements collected under that programme are freely accessible on the web <http://data.shom.fr/#donnees/refmar> for all areas under French jurisdiction. Shom itself operates and maintains a large tidal network reporting in real time, RONIM, which is a major contribution to REFMAR.

This network is recognized as an important tool for coastal operational oceanography, risk assessment, studies on the evolution of the mean sea level, etc.

Shom's tidal predictions are available through a web/smartphone/tablet-friendly online service named [maree.shom.fr](http://maree.shom.fr).

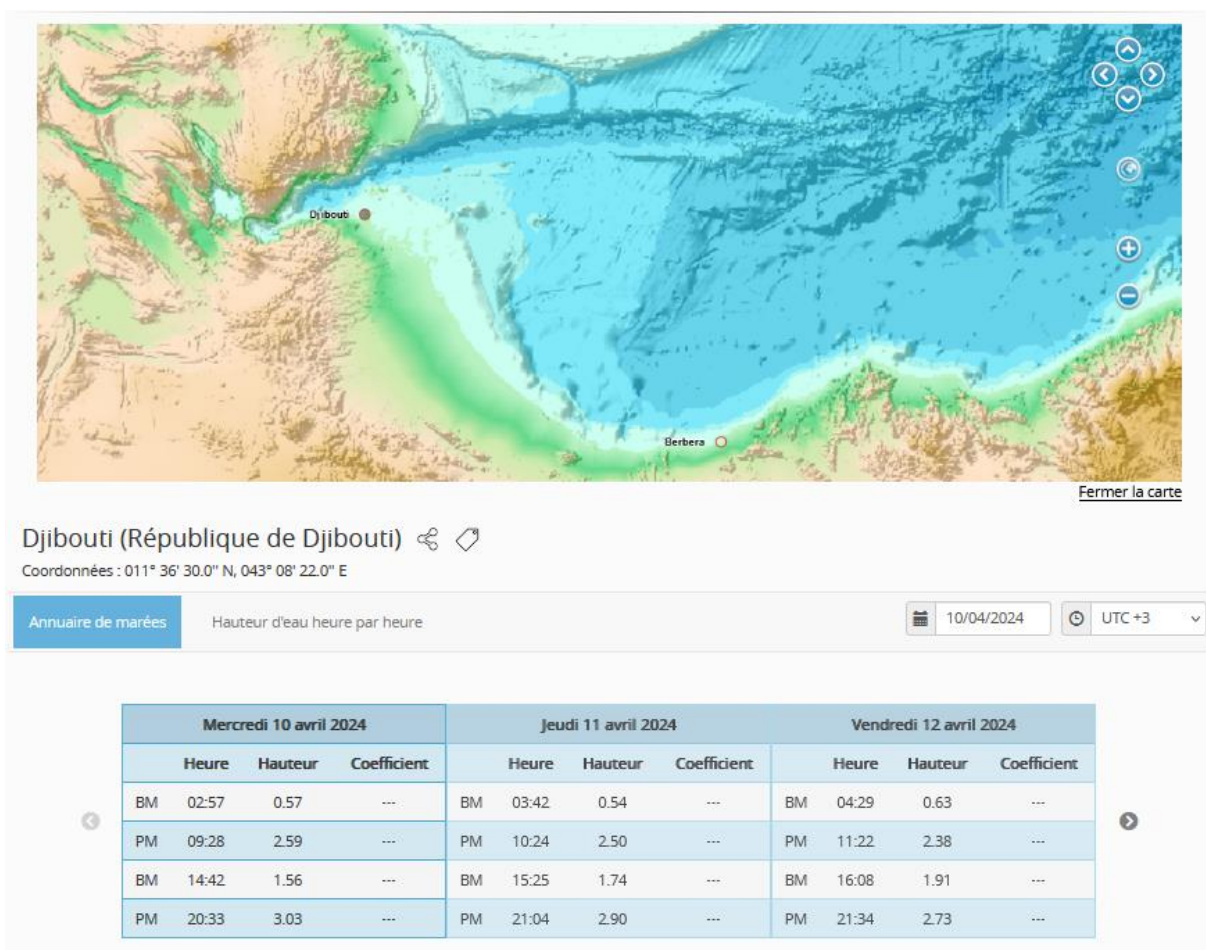


Fig. 8 – Tide predictions for Djibouti available through Shom's web portal (source: maree.shom.fr)

#### 8.4. NEW EQUIPMENT

NTR.

#### 8.5. CHALLENGES AND ACHIEVEMENTS

##### Evolution of the tidal services

The products called "Annuaire des marées", " Horaires de marées (calculés pour 100 ports)" and " Prédications à la carte (disponibles pour 1000 ports) ", which were previously available on the portal diffusion.shom.fr, have been merged into a single service called "Marées à la carte".

This service, which calculates tide predictions, can be accessed at the following address: <https://diffusion.shom.fr/marees/horaires-des-marees.html>.

The functions available are:

- Calculation of the times and heights of high and low tides, combined with coefficients (Annuaire des marées). The coefficients are calculated for French Channel and Atlantic ports only;
- Calculation of water level at a given time step (1, 5, 10, 30 and 60 minutes);
- Threshold calculation (search for time slots where a water level is above or below a given threshold).

The results are available in two formats:

- XML: standard exchange format, intended for programming or use on the Web. This format is available for calculating the times and heights of high and low water;
- TXT: simple text format in columns. Format available for calculating times and heights of high and low water, water levels at a given time step and thresholds.

A user guide describing the various functions and settings of the service is available on the service's home page by clicking on the "More details" link.

## 9. SPATIAL DATA INFRASTRUCTURES

### 9.1. STATUS OF MSDI

Shom develops and maintains a MSDI covering all maritime areas under French jurisdiction. The information thus compiled is accessible through 3 portals:

- [data.shom.fr](http://data.shom.fr)
- [diffusion.shom.fr](http://diffusion.shom.fr)
- [maritimelimits.gouv.fr](http://maritimelimits.gouv.fr)

### 9.2. RELATIONSHIP WITH THE NSDI

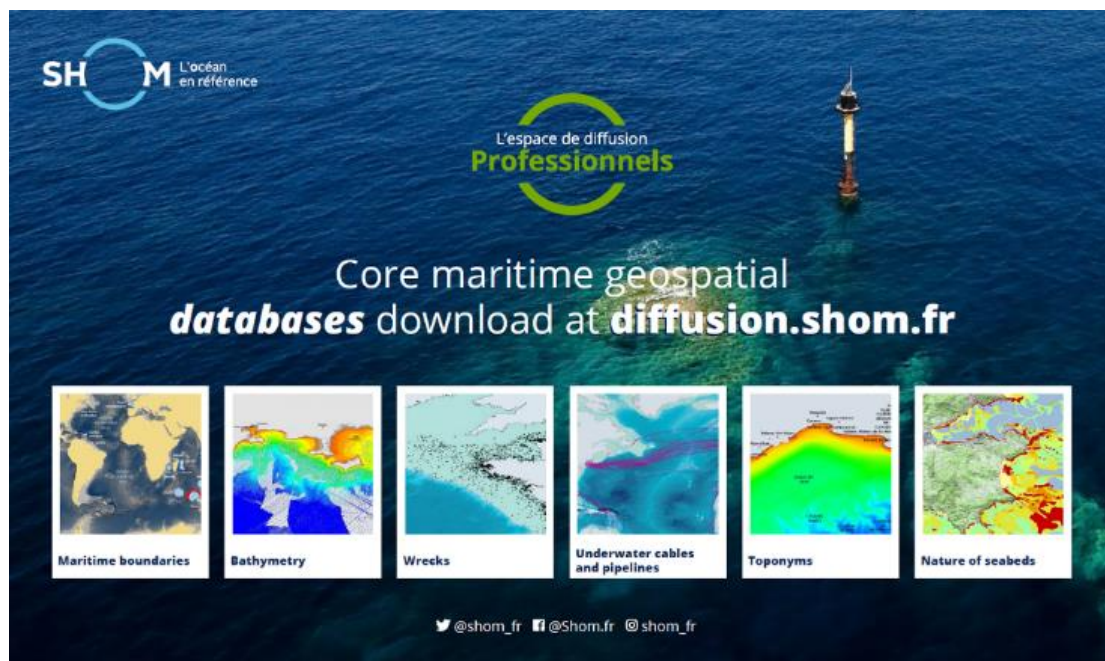
The various maritime geographical information produced by Shom are referenced on the French NSDI (<https://www.data.gouv.fr/>).

### 9.3. INVOLVEMENT IN REGIONAL OR GLOBAL MSDI EFFORTS

Shom contributes to the IHO MSDIWG.

### 9.4. NATIONAL IMPLEMENTATION OF THE SHARED DATA PRINCIPLES – INCLUDING ANY NATIONAL DATA POLICY AND IMPACT ON MARINE DATA

In accordance with France open data policy, Shom has opened access to its basic data: bathymetric data, wrecks, cables, seabed types, maritime limits & boundaries, toponymic databases, port information, and maritime regulations, etc. These data are distributed under a Creative Commons "CC-BY-SA 4.0" license or an open license, depending on the case.



*Fig. 9– Access to Shom's open data (diffusion.shom.fr)*

## 9.5. MSDI NATIONAL PORTALS

Data on data.shom.fr portal are organised according to the following topics:

- Master data: cartography, maritime boundaries, maritime and coastal database, coastal altimetry, bathymetry, vertical datums, sedimentology, geophysics, tides, currents and historical data;
- Oceanographic forecasts: waves, meteorology, water level, hourly surface hydrodynamic, daily mean 3D hydrodynamic and oceanogram;
- Coastal observations: sea level (REFMAR), sea surface current and sea bottom turbidity.

Not all this information is available on the NIOHC region.

Hereafter are listed some of the latest evolutions:

- Maritime areas – chart 8510CX (edition);
- State action at sea – chart 8502 (edition);
- Maritime Altimetric References (edition);
- Global coastline (edition);
- GEBCO worldwide bathymetric DTM (edition);
- Tidal tables calculation (edition);
- On demand tidal table calculation (update).

Those evolutions can all be followed via Shom's Twitter account (@shom\_en & @shom\_fr).

A detailed description of the portal functions and contents is available on Shom website (<https://services.data.shom.fr/support/fr>).

## 9.6. BEST PRACTICES AND LESSONS LEARNED

Based on feedback from portal users, new portal ergonomics have been defined.

The new online shop with a more readable offer and a simplified and more intuitive user experience is now available.



*Fig. 10 – New ergonomics of Shom's online shop (diffusion.shom.fr)*



## 9.7. CHALLENGES AND ACHIEVEMENTS

NTR.

## 10. INNOVATION

### 10.1. USE OF NEW TECHNOLOGIES

As part of the preparatory phase for the replacement of the hydro-oceanographic fleet (CHOF project), a three-year agreement was signed with the procurement agency of the French DoD (DGA) to conduct experiments and modernize hydrographic data processing techniques.

An initial experiment was carried out in September 2020 with 2 DriX unmanned surface vehicles equipped with an MBES and a sediment echo sounder, and was repeated in October 2023. From 2021 onwards, numerous other experiments were carried out with Exail's AUV A18D and Kongsberg's AUV HUGIN 6000 Superior to acquire the autonomy required for their use and knowledge of high-resolution seabed mapping.

Shom possesses since 2024 two gliders. The first operate the following equipments: CTD, O2, PAR, ADCP, Chlorophyl, CDOM and Backscattering. The second one has: CTD and hydrophones.

In addition, after several years of operational use of airborne Lidar, experiments are planned in the coming years to test UAVs equipped with bathy Lidar in conditional operations.



*Fig. 11 - Experiment of USV DriX deployed from BHO Beautemps-Beaupré (Source: iXblue, 2020)*



*Fig. 12 - Experiment of AUV HUGIN deployed from BHO Beautemps-Beaupré (Source: Marine Nationale, 2021)*

## 10.2. RISK ASSESSMENT

Shom completed in 2020 the development of an experimental tool called "Deseason platform". It is a multi-criteria decision tool for hydrographic risk assessment and cost-benefit analysis. It will be used in the coming years to improve the national hydrographic survey program.

## 10.3. POLICY MATTERS

NTR.

## 11. OTHER ACTIVITIES

### 11.1. PARTICIPATION OF IHO MEETINGS

Due to its overseas territories and primary charting responsibilities, France, represented by Shom, is a member or associate member in 9 regional hydrographic commissions.

The detail of Shom's involvement in other IHO activities is listed in the table hereafter:

Name	Chair / Vice chair	Member	Observations
CBSC		✓	Capacity Building Sub-Committee
NCWG		✓	Nautical Cartography Working Group
ENCWG		✓	ENC Standards Maintenance Working Group
DPSWG		✓	Data Protection Scheme Working Group
DQWG		✓	Data Quality Working Group -Last meeting in 1996
EAtHC	✓	✓	Eastern Atlantic Hydrographic Commission
FC		✓	Vice-chairman of Finance Committee
GEBCO		✓	Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of Oceans (GEBCO)
HCA		✓	Hydrographic Commission on Antarctica
HDWG		✓	Hydrographic Dictionary Working Group
HSSC	✓	✓	Hydrographic Services and Standards Committee
IENWG	✓	✓	IHO-European Union Working group
IRCC		✓	Inter-Regional Coordination Committee
MACHC		✓	MESO American & Caribbean Sea Hydrographic Commission
MBSHC		✓	Mediterranean and Black Seas Hydrographic Commission
MSDIWG		✓	Marine Spatial Data Infrastructure Working Group
NIOHC		✓	North Indian Ocean Hydrographic Commission
NIPWG		✓	Nautical Information Provision Working Group
NSHC		✓	North Sea Hydrographic Commission
RSAHC		✓	ROPME Hydrographic Commission
S100WG		✓	S-100 Working Group
SAIHC		✓	Southern Africa and Islands Hydrographic Commission

HSWG		✓	Hydrographic Surveys Working Group
SWPHC		✓	South-West Pacific Hydrographic Commission
TWCWG		✓	Tidal, Water Level and Currents Working Group
WEND		✓	World-Wide Electronic Navigational Chart Database
WWNWS		✓	World-wide Navigational Warning Service Sub-Committee

## 11.2. METEOROLOGICAL DATA COLLECTION

NTR.

## 11.3. GEOSPATIAL STUDIES

NTR.

## 11.4. PREPARATION FOR RESPONSES TO DISASTERS

France may have Navy ships in the NIOHC region ready to provide support in case of an emergency. France also provides technical support and has a rapid response capacity for environmental data in case of a disaster.

The point of contact at Shom in case of a marine disaster is the head of the maritime safety information division. This division can be reached 24/7 by fax +33 298 221 665 or email [coord.navarea2@shom.fr](mailto:coord.navarea2@shom.fr).

- Tsunami alert

NTR.

- Coastal flooding

NTR.

- Oil spills

Shom is an active member of the inter-agency drifting committee which is activated by the maritime authorities every time there is an oil spill. The POLMAR safety plan for the sea was signed on 23<sup>rd</sup> November 2004 and aims at enabling France to face in a reactive manner a potential wide spread of marine pollution, by ensuring the efficient coordination of national operations and support from public services.

## 11.5. ENVIRONMENTAL PROTECTION

NTR.

## 11.6. ENGAGEMENT WITH THE MARITIME ADMINISTRATION

NTR.

## 11.7. AIDS TO NAVIGATION MATTERS

NTR.

## 11.8. MAGNETIC AND GRAVITY SURVEYS

NTR.

## 11.9. INTERNATIONAL ENGAGEMENTS

For the countries benefiting from Shom support to meet their hydrographic services obligations spelled out by the SOLAS convention, France fosters a mechanism of gradual transfer of responsibilities through State-to-State administrative arrangements. This mechanism relies on training at Shom facilities and the formalization of the respective responsibilities for maritime safety information, hydrographic and charting activities.

Within the NIOHC area, a bilateral arrangement of this kind is concluded between France and the Republic of Djibouti.

An arrangement for the exchange and reproduction of nautical products, in accordance with IHO Resolution 7/1919 as amended (former A3.4) has been concluded with the National Hydrographic Office of India (INHO). The last revision was signed in June 2021.

## 12. CONCLUSIONS

Shom supports any initiative aimed at improving hydrographic knowledge and navigation safety, insofar as the data collected benefit the cartographic authorities and the updating of the nautical documentation of this region.

**APPENDIX I TO THE REPORT N° 030/SHOM/DMI/REX/NP DATED APRIL 29<sup>TH</sup>, 2024**  
**NATIONAL MSI SELF-ASSESSMENT**

Country: FRANCE  
 Organization: Shom

**MARITIME AREA**

*[Describe maritime area including details of the geographic boundaries]*

The maritime area includes coastal waters (up to 250 NM) of La Reunion Island.

**OPERATIONAL POINTS OF CONTACT FOR THE NATIONAL COORDINATOR**

INSTITUTION	TELEPHONE	FAC SIMILE	EMAIL
Shom, overseas office of the "Information and Nautical publication" department of the "Maritime Products and services" division	+33 2 56 312 306 +33 2 56 312 445	/	<a href="mailto:infonaut-zre@shom.fr">infonaut-zre@shom.fr</a>

**GMDSS MASTER PLAN**

*[Report on the status of the GMDSS Master Plan: Is it up to date? When was the last update?]*

The French GMDSS Master Plan is compiled in the Shom publication "Maritime radiocommunications" reference n°924-RNC available on-line : <https://diffusion.shom.fr/pro/rsx-92-4-radiocommunications-maritimes-systeme-mondial-de-detresse-et-de-securite-en-mer-smdsm.html>

The publication is regularly updated (last version June 15<sup>th</sup> 2022).

*[Specifics of equipment used and software version with date up-dated]*

Equipment Type for Ports and Local Area	Software Version	Date of Up-date
No NAVTEX station in French overseas territories within the MACHC region. Coastal warnings broadcasted through SAFETYNET	NTR	NTR
Terrestrial radiocommunications HF, MF and VHF means	NTR	NTR

*[Detail the number of warnings identified as immediate priority (requiring transmission within 30 minutes) and the average elapsed time for passing to NAVAREA coordinator, as reported to the last RHC meeting]:*

Year Y-2		Year Y-1		Year Y	
Total	Average elapsed time	Total	Average elapsed time	Total	Average elapsed time
NTR	NTR	NTR	NTR	NTR	NTR

**NAVTEX COVERAGE:**

*[Diagram of NAVTEX stations and service areas within maritime area; Contact details for NAVTEX Stations; Confirm operational status has been validated.]*

Not applicable.

Coastal warnings broadcasted by SafetyNET in French overseas territories.

**OPERATIONAL ISSUES:**

*[New infrastructure in accordance with GMDSS Master Plan; Problems encountered?]*

NTR.

**CONTINGENCY PLANNING**

*[Provide information regarding contingency plans that have been established and future plans where appropriate. Also report on any testing of the plan that has been conducted]*

The mutual support process between NAVAREA II and VIII coordinators was successfully tested in June 2018.

**CAPACITY BUILDING**

*[Demands for Capacity Building, Training requested or received, any offered, status of national, bilateral, multilateral or regional development projects with MSI component]*

Not applicable.

**OTHER ACTIVITIES**

*[Participation in other IHO or IMO Working Groups, Regional Hydrographic Commissions, regional conferences related to MSI over past year]*

Shom participates to IHO and IMO Working Groups, Regional Hydrographic Commissions and the regional conferences related to MSI over past year (SMAN12, NCSR7, DRWG19).

**NATIONAL MARITIME WEBSITE**

*[(Address, statistics (if permitted by national legislation; how often is the information on your web site updated? Do you display the date and time of the last update on your web site?)]*

French overseas territories POC for NAVAREA VIII:

AREA	COUNTRY	NAME	TELEPHONE	FACSIMILE
VIII	French Areas (La Reunion, Island)	Commandant de Zone Maritime Sud Océan Indien	+262 (0)2 62 93 53 54	
		EMAIL	<a href="mailto:emia-saint-denis.permanence-ops.j3.fct@intradef.gouv.fr">emia-saint-denis.permanence-ops.j3.fct@intradef.gouv.fr</a>	

**RECOMMENDATIONS**

*[If any]*

## **SUMMARY**

*[Please provide a short summary of this paper which will be included in the final report of the meeting.]*

Shom, as French national MSI coordinator, do not transmit MSI within the NIOHC region.

Shom controls and coordinates the warnings issued by its national delegated coordinators.

## LISTE DE DIFFUSION

### DESTINATAIRES :

- NIOHC CHAIR (VICE ADMIRAL KOMSAN KLINSUKON THAILAND)
- IHO SECRETARIAT

### COPIES INTÉRIEURES :

- DG
- DMI (D-REX)
- ARCHIVES (DMIDSD 2.015)