



SAIHC 20- Malawi National Report

Malawi Hydrographic Surveys

MALAWI NATIONAL REPORT

to the

20TH SOUTHERN AFRICAN AND ISLANDS
HYDROGRSPHIC COMMISSION
(SAIHC) MEETING

KISUMU-KENYA

16TH-19TH -SEPTEMBER. 2024

1. Malawi Hydrographic Office

The mandate of the Hydrographic office is to carry out hydrographic surveys of Lake Malawi including the lesser lakes of Malombe, Chirwa and Chiuta as well as the Shire River.

Earnest hydrographic surveys of Lake Malawi started in the 1950s by the British Admiralty. After a lapse of about 30 years surveys were resuscitated beginning with French cooperation in 1989 and then in 1999 the cooperation with Iceland which went on up to 2006. By this time, the Malawi Hydrographic office became well established with an ability to carry out surveys throughout Malawi and wherever there was a requirement to carry out surveys be it in dams, rivers or smaller lakes and on ports of call on the coasts of Lake Malawi.



TV. Timba for offshore Surveys

2. Hydrographic Surveys

40% of the total area of 24000km² of Lake Malawi has been surveyed. As of now there still remains a substantial amount of work to be done when the River Shire and the smaller lakes are taken into consideration.

Hydrographic Survey Office reached a new level of achievement in the year 2016 after completion of delimitation of maritime boundary between Malawi and Mozambique. A total maritime boundary of 284.88km (refer annex III) was delimited. As a result of this exercise, Malawi and Mozambique were invited to the African Union Border Programme meeting in Addis Ababa, Ethiopia involving the Riparian States of Lake Tanganyika, namely; Burundi, Democratic Republic of the Congo, Tanzania and Zambia. Malawi and Mozambique therefore shared their successful experience of a Maritime delimitation boundary exercise.

Another assignment carried out involved the Fisheries Sector where a hydrographic survey was carried out in the Southern part of Lake Malawi in the smaller Lake Malombe. The exercise also involved identification of bottom features of the Lake. The exercise was also conducted to generally inform the resilience to climate change in Fisheries sector.

The office embarked and completed coast line and detailed survey of 1: 10,000 charts of Nkhotakata and Salima and the bathymetric Survey in Shire River for the construction of water intake for thermal power plant. The cross-section survey of Lilongwe River for delimitation of 100-years flood level line for the river, to mitigate disasters caused by flooding has been completed and modeling is in process.

National Water Resource Authority engaged Hydrographic Survey Office, Monkey Bay to undertake Hydrographic Survey in Shire River from Liwonde to Zalewa Bridge and on Lake Malawi at different sites; Chilumba, Chiweta, Nkhata Bay, Nkhotakota, Salima and Monkey Bay to produced base maps for siltation/scouring analysis and modelling. All

sites on Lake Malawi have been surveyed, data analyzed and map produced. This year the same exercise will be conducted, data analyzed and compared for siltation/scouring area identification.

Survey Department took part in conducting high-resolution bathymetric survey to map the Lake floor of Lake Malawi, and shallow seismic survey to map the sediments and faults up to 200 m below the lake bottom. This was organized by Syracuse University in USA. The high-resolution bathymetry and seismic data will be used to determine the position and rates of motion and faults below Lake Malawi over geological recent times (last 100,000 years). This information will improve our understanding earthquake hazard to communities in the rift valley for example the 2009 Karonga earthquakes). This exercise read to the findings of; new faults (Timba fault), shallow gas pockets, land slide, sediments pilling and vents refer annex V.

2.1. Problems

The Hydrographic Survey vessel, RV. Timba which has been on repair for a long period is now ready for surveys of Lake Malawi. However, for her to be fully operational there is a need to acquire equipment such as GPS and Echo-Sounder and update data acquisition and processing software among other requirements.

The small launch the Timba II which is very useful for coastal and river surveys also requires a dedicated positioning and data acquisition equipment to function independently. This launch services surveys in mostly coastal and shoal areas.

The government currently has procured a single beam echosounder to be installed on the small launch and it is hoped that all required data acquiring softwares will be sourced and updated accordingly.



Timba II for costal surveys

The purchase of a side scan sonar would assist in achieving 100% bottom coverage to complement the traditional single beam echo sounder especially in harbor and critical areas of concern.

3. New Charts & Updates

To date the following charts have been produced:

Chart No.	Series	Status
C10-8	1:10,000	Printed
C10-7	1:10,000	Printed
C50-24	1: 50,000	Printed
C50-25	1: 50,000	Printed
C50-26	1: 50,000	Printed
C50-27	1: 50,000	Printed

C10-6B	1:10,000	Ready, printed on demand using CARIS Software
C50-1B	1: 50,000	Ready, printed on demand using CARIS Software
C10-4A	1:10,000	Data acquired & validated
C10-2	1:10,000	Data acquired & validated
C100-5	1:100,000	Few profiles to be redone in the field
C100-2	1:100,000	50% of data acquired

The Chart Index is attached as Annex I.

Part of chart 50-27, (approaches to Shire River) has been revised with an aim of identifying the sand bar at the mouth of the river (refer annex IV).

Chart Index II takes into account new developments. This takes care of large-scale charts required in areas of significant fishing concerns and the sugar factories in Nkhotakota, Salima and Chikwawa districts in the lakeshore and river Shire areas.

ENCs and RNCs are not in production. In addition, INT and pleasure Craft charts have not been produced as yet and it is hoped that if another project materializes it will take care of some of these matters.

3.1. Problems Encountered

There is a need to acquire chart processing and production software for chart production.

4. New Publications & Updates

. The Hydrographic Survey Office is planning for the revision of the Lake Malawi Sailing Directions to be carried out later on this year concomitant with surveys for large scale surveys. The Hydrographic office works in close cooperation with the Marine Department in order to adequately chart the priority areas.

4.1. Problems encountered

With the RV Timba about to start survey operations it is hoped that preparation of the sailing pilot will resume concurrently with bathymetry Survey of the Lake. Lack of expertise hinders the production and publishment of the book.

5. Maritime Safety Information (MSI)

Nation/Area	INT Region	Local Warning	Coast Warning	Navarea Warning	Port Info	Master Plan
Malawi	H	Through radio	No	No	VHF radio	Marine Transport Sector

The transmission of safety information to Mariners is the responsibility of Marine Services Department. To this effect the Marine Services department has formulated a Master Plan for the Marine Transport Sector.

IMO carried out an audit scheme which includes safety of navigation and importance of charts. Currently, however the main items for communication are still problematic which has now and again compromised safety at critical times when ships need urgent rescue.

5.1. Problems Encountered

The Hydrographic Survey office still intends to work in close cooperation with Marine Department in order to develop reliable Maritime Safety Information.

6. C-55

As has been the case, charts are at scales 1:10000, 1:50000 and 1:100000. With the resources at hand the status of hydrography and nautical cartography may be ranked as fairly good. However, with the lapse of time and the inactivity brought about when the survey vessel Timba was idle, we have somewhat lagged behind. Still the revival of operations will enable resumption of production of charts and we look forward to this.

The C55 status therefore remains similar to the one carried out during the IHOCBC Malawi Visit Report of 2008.

7. Capacity Building

It is obvious that personnel have been the major input into the achievements made to date and in order to avoid gaps, capacity building needs to be a continuous exercise. Training is thus required in hydrography and nautical cartography.

The Government of Malawi has trained its members at local Universities and at international training institutions such as the STC in Netherlands and Trieste in Italy. And at an earlier stage training was also provided by France at EPSHOM. In addition, training has been funded by the IHOCBC mainly in Hydrographic awareness during SAIHC meetings. Currently comprehensive training is sought both at CAT A and B training in Hydrography.

Malawi, Iceland and Mozambique have had multilateral agreements to conduct hydrographic surveys on Lake Malawi and Lake Niassa this assisted hydrographic staffs to improve their skills and knowledge in Hydrography. The joint project of the lake boundary between Malawi and Mozambique sponsored by the German cooperation GIZ, benefited Malawi and Mozambique by having their officers trained in CARIS Lots software which resulted in successfully delimiting maritime boundary of the lake.

Malawi hosted the 5th African Great Lakes and Rivers Sub working Group meeting in Lilongwe in December 2022. Among other things the meeting promoted hydrography among countries within African Great Lakes and Rivers. This was an eye opener to Malawi government officials and brought awareness and changed the mentality towards hydrography. And during this meeting challenges and experience among countries within inland waters were shared.

Officials from Malawi visited the United Kingdom Hydrographic Office (UKHO) from 27th June to 28th June 2024 for a bilateral meeting in Taunton, United Kingdom.

The aim of the meeting was to build a strong joint partnership, to sign MOU (Memorandum of Understanding), to update and discuss opportunities for African Great Lakes and to update on International Hydrographic Organization (IHO) matters and next digital navigation services (S-100)



Delegates to the Signing of MOU

8. Oceanographic Activities

The department of Water resources maintains a network of tide gauges throughout the western part of the Lake including gauges on Lake Malombe and the Shire River. Hydrographic office and department of water resources were engaged in hydrographic survey of the approaches to Shire River which has been explained earlier on. This was to correct hydraulic modeling data in order to come up with better model of the riparian areas.

The Hydrographic office recently was also engaged on installation of two more water gauges along Lake Malawi in Nkhotakota and Mangochi for monitoring of Lake Malawi water level by Electricity Generating Company of Malawi.

The hydrographic office also maintains one automated pressure tide gauge at Monkey Bay, but additional automatic pressure tide gauges will need to be installed at Nkhota Kota, Nkhata Bay and Chilumba ports in order to complement and check the Water

Resources department data. The commencement of operations should revive most of the planned installations. Other oceanographic equipment used by the hydrographic office includes a sound velocity profiler and a Grab corer.

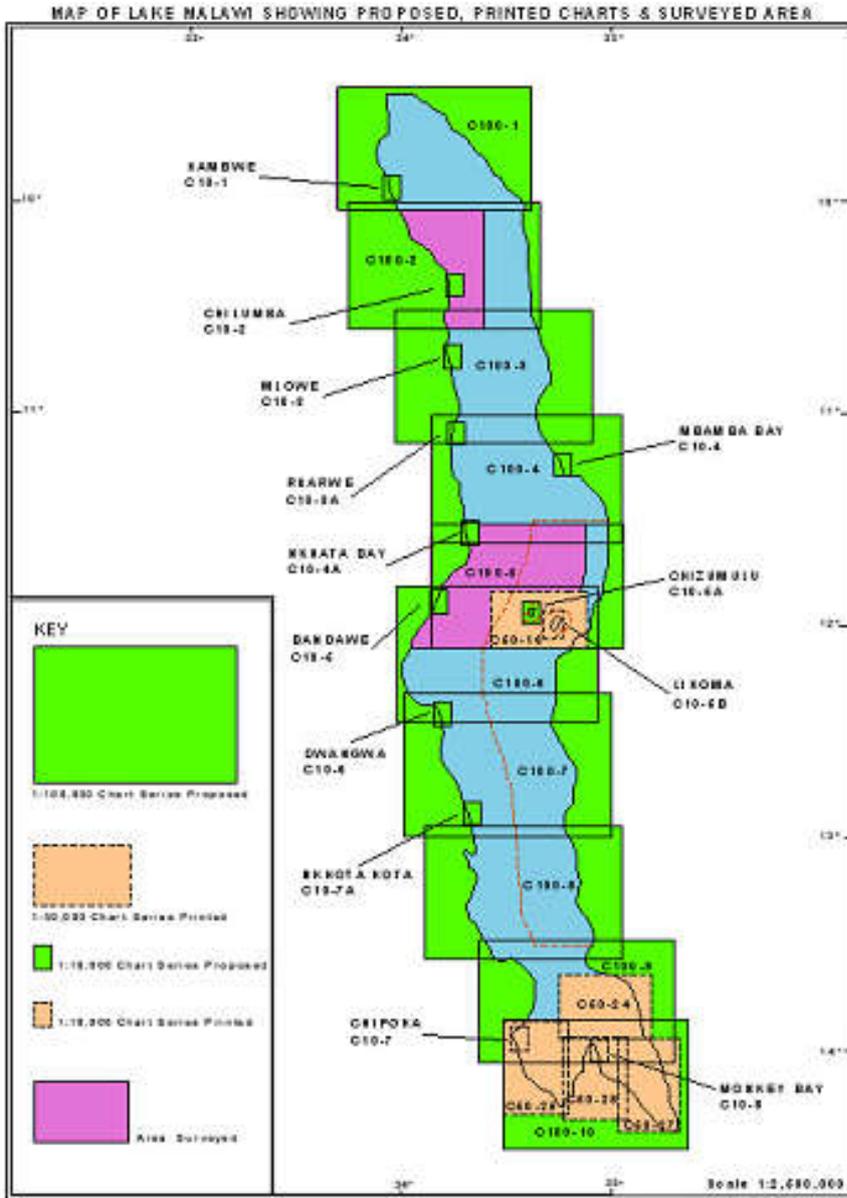
8.1. Problems encountered

The automatic tide gauge and the sound velocity profiler are not in a working order but when operations start in vigor, may require densification.

9. Concluding Remarks

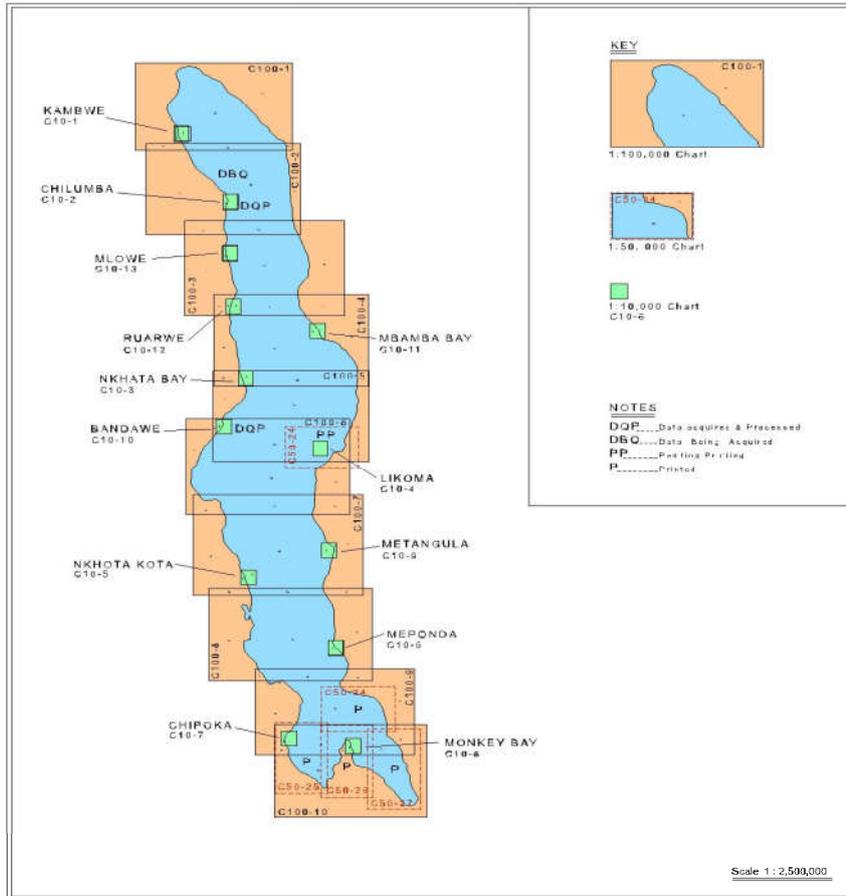
With the growing demand of hydrographic data by different stakeholders, we have to strive for modern equipment and technology for a wider use of hydrographic data. Major achievements have been charting coverage of 40% of the Lake Malawi, completion of delimitation of maritime boundary between Malawi and Mozambique, collected seismic survey data for the Lake Malawi in Karonga and Nkhata-Bay and Signing of Memorandum of Understanding of bilateral Agreement with UK Hydrographic Office.

We are very much grateful to UKHO for its assistance in the development of Hydrographic Governance in Malawi, especially in the phases of building awareness to the government and other stake holder, and collection and circulation of nautical information necessary to maintain existing charts and publication.

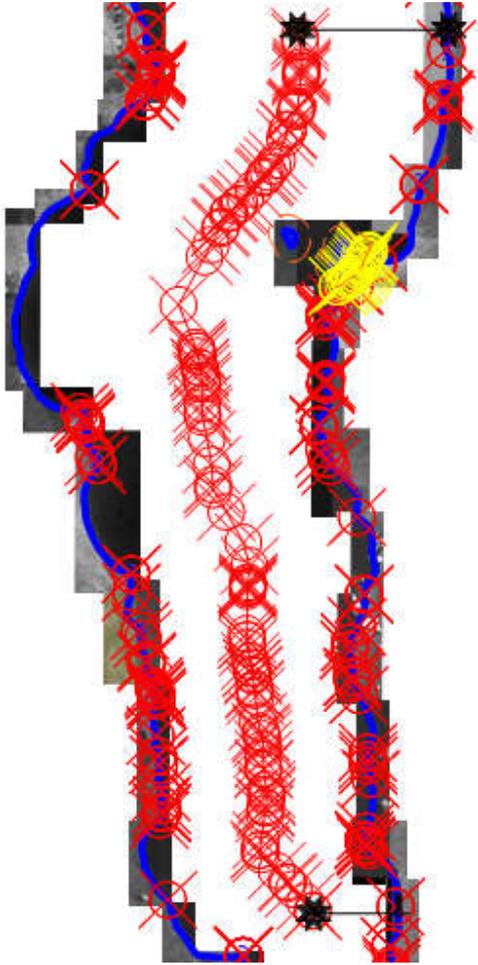


Annex 1

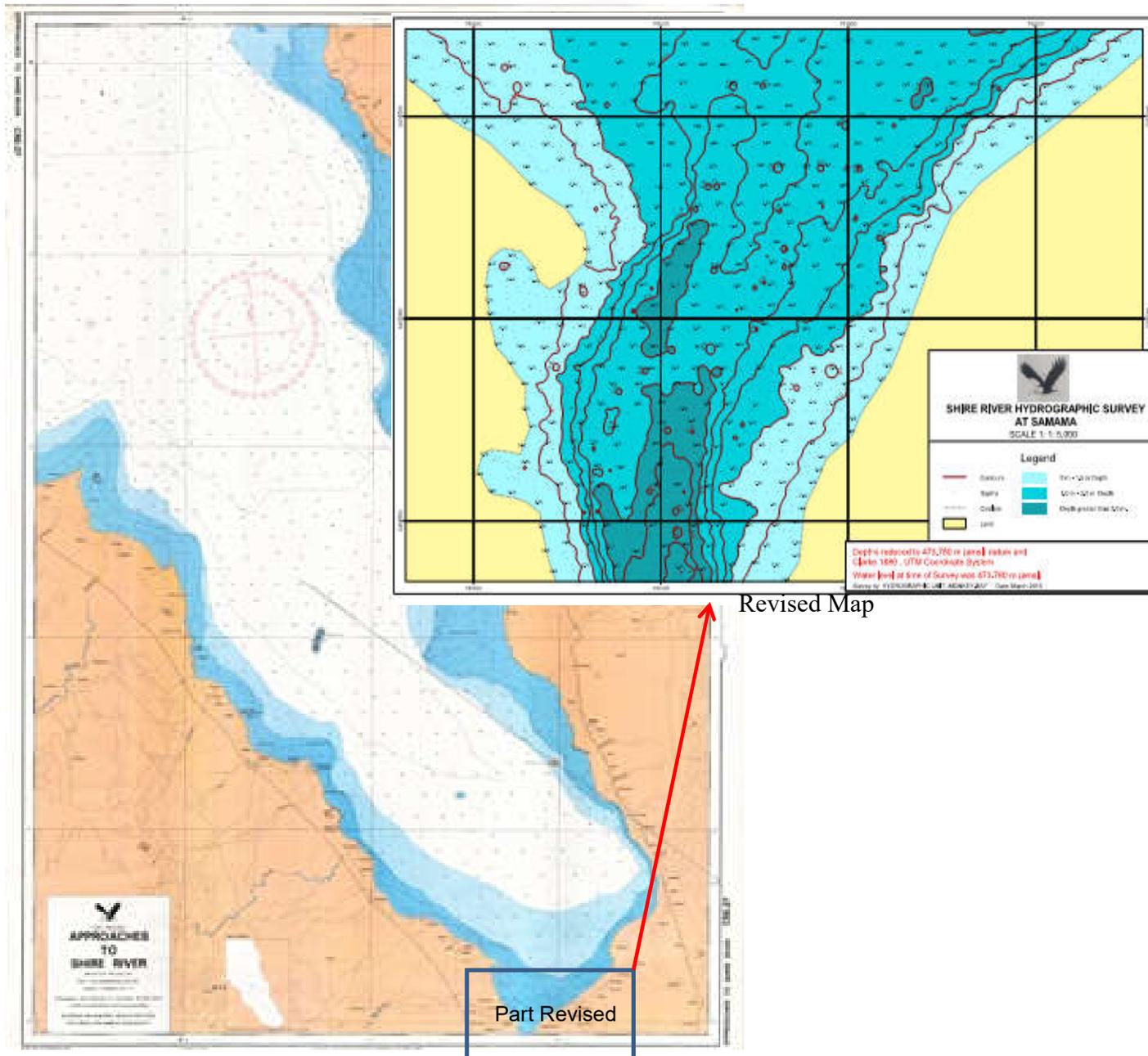
PROPOSED CHART INDEX



ANNEX II



Annex III



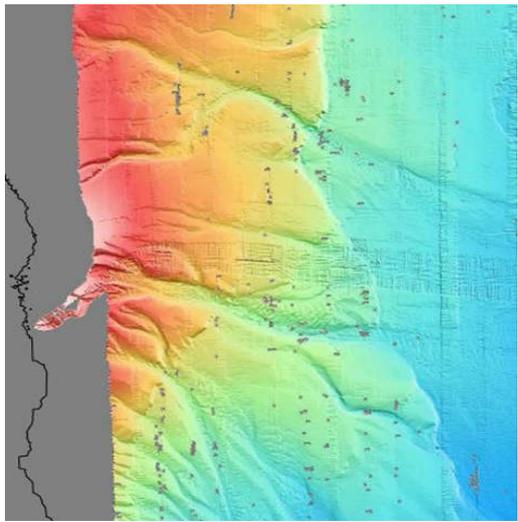
Annex IV

Input to the IHO Publication P-5 (*Yearbook*)*Country: MALAWI**Organization: DEPARTMENT OF SURVEYS –HYDROGRAPHIC UNIT*

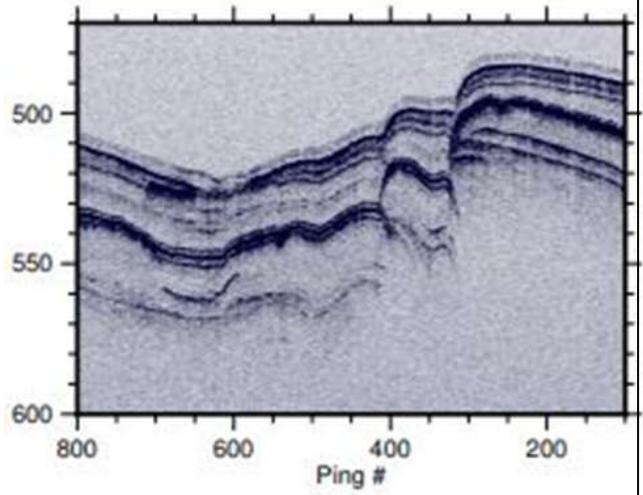
Contact information/ Informations de contact / Información de contacto	
-National Hydrographer or equivalent -Directeur du service hydrographique ou équivalent - Director del Servicio Hidrográfico o equivalente	Post: SURVEYOR GENERAL Name: MR. MASIDA MBANO Postal address: PRIVATE BAG B525, LILONGWE Tel:+265991330688 Fax: Email:masidambano@gmail.com
-Head of the Hydrographic Office (if different from the person indicated above) -Directeur du Service Hydrographique (si différent de la personne indiquée ci-dessus) -Director del Servicio Hidrográfico (si diferente de la persona indicada anteriormente)	Post: Hydrographer Name: MR. GIFT CHIGONA Postal address: P.O. BOX 127, MONKEYBAY Tel:+265999942108 Fax: Email: giftchigona@gmail.com
-Other point(s) of contact -Autre(s) point(s) de contact -Otros punto(s) de contacto	
-Web site -site web -sitio web	
Country information / Informations sur le pays/ Información sobre el país	
-Declared National Tonnage -Tonnage national déclaré -Tonelaje Nacional Declarado	Tonnage: 5,000 Date: 06/08/2023
-National day -Fête nationale -Fiesta nacional	

-Date of establishment and Relevant National Legislation -Date de mise en place et législation nationale pertinente -Fecha de constitución y legislación nacional pertinente	
-Date first joined IHO -Date d'adhésion à l'OHI -Fecha de adhesión a la OHI	
-Date ratification Convention -Date de ratification de la Convention -Fecha de ratificación de la Convención	
-Remarks on membership -Remarques sur l'adhésion -Comentarios sobre la adhesión	PLANNING TO JOIN
Agency information/ Information sur l'agence/ Información sobre la agencia	
-Top level parent organisation -Organisme mère -Organización asociada de nivel superior	MINISTRY OF LANDS
-Principal functions of the organisation or the department -Attribution principales de l'organisme ou du département -Principales funciones de la Organización o departamento	PRODUCTION OF CHARTS FOR SAFETY OF NAVIGATION, PUBLICATION OF PILOT BOOK, PUBLICATION OF NOTICES TO MARINERS,
-Annual operating budget -Budget annuel -presupuesto anual	
-Total number of staff employed -Effectifstotaux -Número total de personal empleado	24
-Number of INT charts published -Nombres de cartes INT publiées -Número de cartas INT	

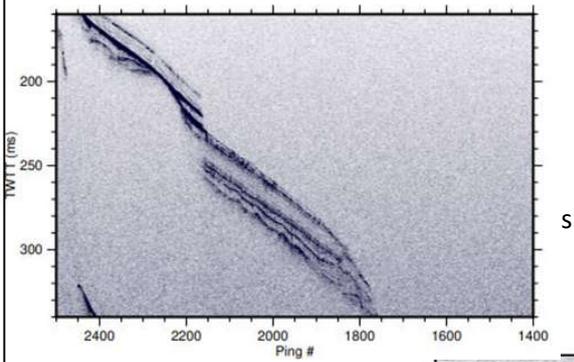
publicadas				
-Total number of paper charts published-Nombre total de cartes papier publiées-Número total de cartas de papelpublicadas	6			
-Number of ENC cellspublished -Nombres de cellules ENC publiées -Número de células ENC publicadas				
-Number of Other charts -Nombred'Autrescartes -Número de Otras cartas	14 (very old, printed in 1958)			
-Type of publications produced -Type d'ouvrages produits -Tipo de publicacionesproducidas	PILOT BOOK (Need to be revised)			
-Detail of surveyingvessels/ aircraft -Détail des bâtiments hydrographiques / aéronefs -Detalle de los buques hidrográficos / aeronaves	R.V. Timba	70 tones	1988	12
	Timba II	7 tones	2006	6
-Other information of interest -Autresinformationsutiles -Otrainformación de interés				



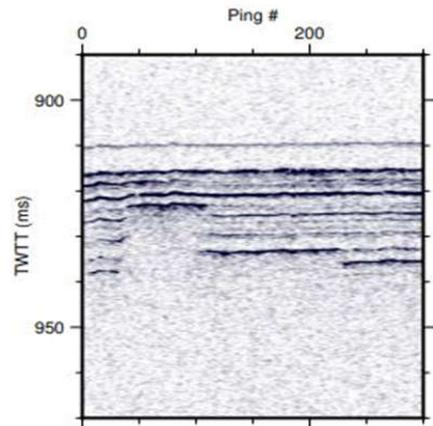
Sedimentatio



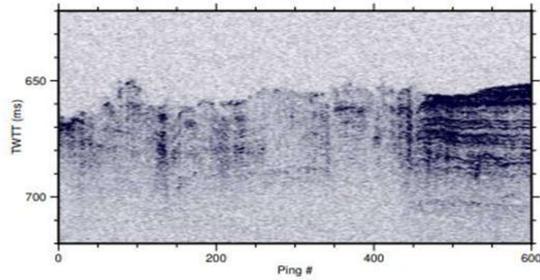
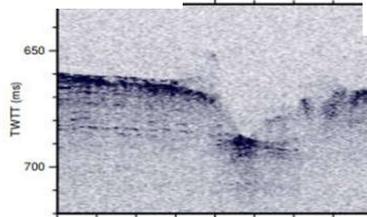
Timba Fault



Slide



Shallow gas



Vents