

## ***1 Malawi Hydrographic office***

The federal government hydrographic surveys section was disbanded in the early 60's after the dissolution of the federation of Rhodesia and Nyasaland. After a period of almost 30 years the Malawi Hydrographic unit was resuscitated in 1989 with the assembly of a 70-ton ship R.V Timba grace of the French government aid. The objective this time around was not only to survey Lake Malawi but included the lesser Lakes of Malombe, Chilwa and Chiuta and also the Shire River. The French funded project was short lived due to financial hiccups especially in operational funding. Nevertheless, by this time one Hydrographer had been trained at Brest, France and the ship, R. V. Timba, was fully functional.

However in 2001 the project "Charting of Lake Malawi for the safety of navigation" was embarked on funded by ICEIDA (Icelandic International Development Agency) and the Malawi government. This project resuscitated the operations of HO.

## ***2 Surveys***

Lake Malawi, which is 570km long in the north-south direction and 16 to 80km wide, has an approximate area of 24000km<sup>2</sup>. Since the launch of the "charting of Lake Malawi for the safety of navigation" project that was embarked in 2001, a substantial amount of bathymetric data has been acquired and several charts have been produced. Significant investment in equipment and modern software was instrumental in the production of charts. To date 40% of the total area has been surveyed.

### ***Problems encountered***

Problems that have been encountered are; among others:

- Breakdown of both hydrographic vessel engines
- Breakdown of DGPS receiver
- Lack of small hydrographic launch made it difficult to survey coastal and shoal areas.
- Without multibeam echo sounder it is not possible to achieve 100% bottom coverage in harbour and critical areas.

## ***3 Charts and publications***

### **A. Charts**

Several new charts have been produced, these are:

#### **i. Data acquired**

- **1: 100,000 Series**  
C100-2 (50% of data has been acquired.)

**ii. Data acquired and validated**

- **1:10,000 Series**
  - a. C10-3
  - b. C10-2
  
- **1:100,000 Series**  
C100-5 (few profiles to be redone in the field)

**iii. Charts ready for printing**

The following charts are ready for printing, and currently are printed on demand using CARIS Software:

- **1: 10,000 Series**  
C10-4)
  
- **1: 50,000 Series**
  - a. C50-15

**iv. Charts printed**

- **1: 10,000 Series**
  - a. C10-8
  - b. C10-7
  
- **1: 50,000 Series**
  - c. C50-24
  - d. C50-25
  - e. C50-26
  - f. C50-27

See attached chart index, Annex I

ENCs- the development of ENC is yet to be embarked on and should commence when resources and infrastructures become available.

RNCs (Raster Navigation Chart) – these can simply be produced by scanning at high resolution the original reproprints. Not yet available at present.

No INT and Pleasure Craft Charts have been produced as yet.

***Problems encountered***

- Unavailable of printing materials and press. The department is looking into purchasing a printing press which is also required for production of new topographic maps that are currently outdated.

**B. Publications**

No new or updated publications have been made, the office has embarked on revising Lake Malawi Pilot this financial year (2009 -2010)

This is important to detail information about the coast and highlight dangers and show places of interest to tourism for example. There will be close cooperation with the Department of Marine Services for this input.

Problems encountered

- Lack of trained or experienced personnel in the preparation of sailing pilot

#### 4. *MSI*

Nation/Area	INT Region	Local Warning	Coast Warning	NAVAREA Warning	Port Info	Master Plan
Malawi	H	Partial Lake Mw pilot update	No	No		

The transmission of safety information to Mariners is the responsibility of Marine Services Department.

#### *Problems encountered*

Maritime Safety Information is not so well developed. Information on the weather is broadcast on the local radio and television. Generally during the months of June to August southeasterly winds are prevalent which blow up the length of the lake. This can go on up to a week.

The Maritime Safety channel (channel 16) is dedicated for distress alert messages but it is not obvious if most navigators use it effectively.

Maintenance of navigation lights is again the prerogative of the Marine Department. However these have not been maintained for some time now. There are plans to replace the lights with robust ones, which are almost “theft proof” all lights will be surveyed, coordinated and heighted. In addition other useful features and transit marks will be included in a new ‘sailing directions’. A system of notices to Mariners is not fully operational; this again awaits implementation by Marine Department.

#### 5. *Capacity Building*

Though achievements have been registered in the sense that surveys have been carried out and charts have been produced using the available personnel it is obvious that there are no ready replacements for the staff. Two hydrographers have been trained to date; one at EPSHOM in Brest, France and the other at Trieste in Italy. Sadly, the Trieste trained Hydrographer passed away. Thus more opportunities for training are still being sought if we are to achieve continuity. The Cartographic section has similar problems and training has been on the job and from experience in land cartography as opposed to nautical cartography.

Applications for training in hydrography have been made to the hydrographer in India at Goa but no response in forthcoming yet. However government is making all efforts to maintain a trained staff and in this sense one staff member from the hydrographic office has been reserved a place at the STC training in Netherlands which training is to be fully financed by the Malawi government. Training is also sought for CAT A training in hydrography.

Training in nautical cartography is required especially in view of advances in automated cartography. We hope the international community can look favorably once again on matters of training for our upcoming Malawi hydrographic concern.

The cooperation between Malawi and Iceland brought with it such equipment as DGPS receiver, computer hardware and software. Printers, plotter, scanner, automated pressure tide gauge, sound velocity profiler and in data acquisition, Hypack data acquisition and processing software. In addition the CARIS chart processing software was a landmark towards achieving modern chart production capabilities.

Formal multilateral agreement between Malawi, Mozambique and Iceland (ICEIDA) through “charting of Lake Malawi (Niassa) project has provided professional development whereby Malawian hydrographers interacted with the new data acquisition system i.e. RTK GPS and multibeam echo sounder. The survey work was completed in the year 2007. However Malawi is still waiting for the charts produced from the exercise from our counterparts from Mozambique.

Meanwhile there is a Shire – Zambezi waterway project under study that will benefit Malawi as well as the SADC region in the shipping industry.

## 6. *S-55*

The charts are at scales 1:10000, 1:50000 and 1:00,000

With the resources at hand the status of hydrography and nautical cartography may be ranked as fairly good. As mentioned above 40% of the whole lake area has been surveyed. Two charts at 1:10000 and four charts at 1:50000 scales have been printed. One chart at 1:10000 and one at 1:50000 chart scales are being printed on demand.

See attached Annex II (extracted from IHOCBC Malawi visit report 2008)

## 7. *Oceanographic activities*

A network of staff tide gauges running the whole stretch of the western coast of Lake Malawi including Lake Malombe and Shire river are maintained by the Ministry of Water and Irrigation Development.

One automatic pressure tide gauge located at Monkey-Bay Harbour was installed in 2001 and is maintained by the Malawi Hydrographic Unit. Proposed sites for additional automatic pressure tide gauges are at Nkhotakota, Nkhata-Bay and Chilumba ports.

A sound velocity profiler model 650 is used to calibrate the echo sounder. In case of failure of this equipment a bar check is used. For sediment sampling and description of the lake bottom characteristics, a Grab Corer was acquired.

Problems encountered

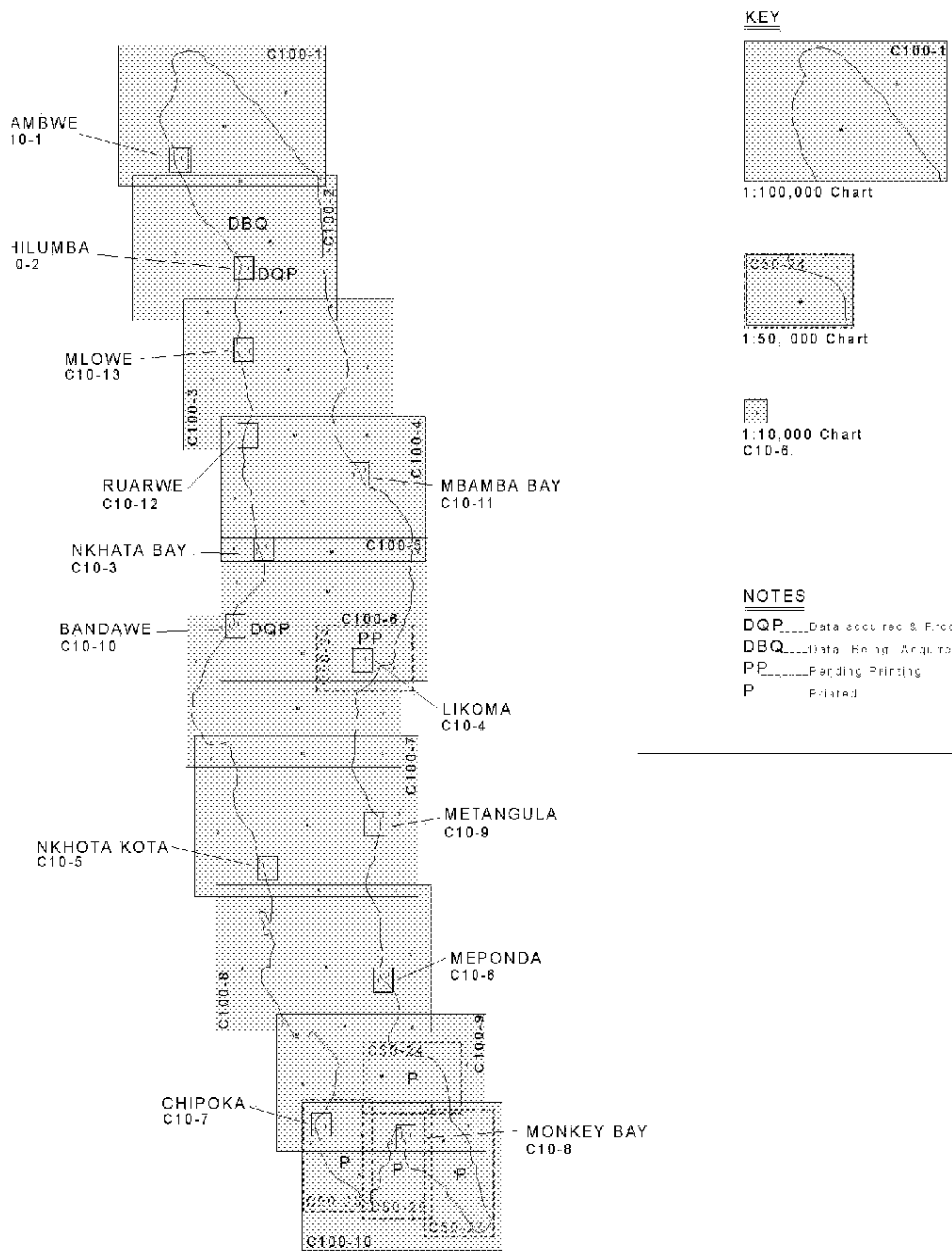
- Lack of a current meter prevents the inclusion of water current information on the charts.
- The Grab Corer is still in-operational due to problem of the winch motor. The motor has not yet been replaced due to other priorities.

## **8. *Concluding Remarks***

Though achievements have been registered by the Malawi hydrographic Unit a lot more still remains to be done in order for the HO to succeed in its endeavors of producing modern navigation charts, revising the Lake Malawi Pilot, providing a survey revision facility and monitoring services of the lake environment.

There is therefore need to invest in human resource and infrastructure development such as a coastal survey launch in order to overcome the problems mentioned above. To varying degrees of success the Malawi government is making efforts to overcome these problems. Malawi is very serious about the impending shire/Zambezi waterway project and the hydrographic office will be very much involved and part of the hub activity when the feasibility study starts. Already the construction of the port at Nsanje district which used to be known as Port Herald in the colonial era has started in full swing and is envisaged for completion this December 2009.

PROPOSED CHART INDEX



Scale 1:2,500,000

IMO Special Publication S-55 Update (38th Meeting Apr / May 2008)

Page 32  
 Basic Data

Maritime Nation/Area	Nation or Area Code	Region ID	Nation or Area (N or A)	FEZsq km x 1000	Length of Coastline (km)	Data for S-55	Latest Update	IMO Year of State
Malawi	MW	AF	N	249	1290	3	May 2006	IMO S-55 Annex 1

Page 40  
 Hydrographic Resources

Maritime Nation/Area	Hydrographic Survey Vessels	Hydro Staff	Positioning Methods
Malawi	>100m 50m-100m 25m-50m	1 Specialists 2 Assistant	Long-40km Medium-5-40km RTK RTK

IMO S-55 Annex 2

Page 48  
 Status of Hydrographic Surveys

A1 = % which has been adequately surveyed  
 B1 = % which requires re-survey at larger scale or to modern standards  
 C1 = % which has never been systematically surveyed  
 An entry of 1 in column A1 indicates inland waters

Maritime Nation/Area	Data	State of Hydrography 0-50m			State of Hydrography 50m-500m			State of Hydrography >200m		
		% adequate	% resurvey	% unsurveyed	% adequate A1	% resurvey B1	% unsurveyed C1	% adequate	% resurvey	% unsurveyed
Malawi		30	0	70	33	0	67	0	0	0

IMO S-55 Annex 3

Summary Report on the Status of ENCS (continued)

Country	Region	Land	Coast	Sea Area	Port Area	Maritime	AI Sea Area	AI Sea Area	AI Sea Area	NAVTEX	SAR/RES
Malawi	II	Partial	NO	NO	Partial	NO	0	0	0	0	0

IMO S-35

Summary Report on the Status of RNCs

In the table below, -I has been used for Inland Waters

Nation / Area	INT Region	Small Scale	Medium Scale	Large Scale
Malawi	II	0	0	0

IMO S-38

Summary Report on the Status of ENSCs

In the table below, -I has been used for Inland Waters

Nation / Area	INT Region	Small Scale %	Medium Scale %	Large Scale %
Malawi	II	0	0	0

IMO S-39

Summary Report on the Status of INT Charts

In the table below, -I has been used for Inland Waters

Nation / Area	INT Region	Small Scale	Medium Scale	Large Scale
Malawi	II	0	0	0