Malawi National Report August 2011

1 Malawi Hydrographic office

The Malawi Hydrographic office was started 30 years after the federal government hydrographic surveys. In the year 1989 the 70-ton ship R.V. Timba was assembled with assistance from the French government. An Atlas Deso 22 echosounder was also procured during this time. The hydrographic office objective was to carry out surveys of Lake Malawi including the lesser Lakes of Malombe, Chilwa and Chiuta and also the Shire River. By the same token the French government aid included the training of one Hydrographer at EPSHOM in Brest, France. The ship, R.V. Timba was fully functional thus equipped with crew members who could go on voyages at any time required.

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 using mostly modern equipment and software for data acquisition and processing.

Due to scale down of activities after the breakdown of the R.V. Timba in 2007, the following report, save for few changes, is basically similar to the report given at SAIHC 2009.

2 Surveys

Lake Malawi is the third largest lake in Africa and has an approximate area of 24000km^2. 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:

- Malfunction of DGPS receiver due to aging equipment
- Lack of small hydrographic launch has 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 however a side scan sonar could assist if it is purchased as an interim measure.

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

The chart index is attached as Annex I but an updated index could not be incorporated due to time factor

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 repromats. Not yet available at present.
No INT and Pleasure Craft Charts have been produced as yet.

Problems encountered

- Printing press not available. The department is looking into purchasing a printing press which is also required for production of new topographic maps that are currently outdated. A suggestion to print charts on demand has been made by SAIHC advisory team and also to use color fast ink and powder.

B. Publications

No new or updated publications have been made; the office will embark on revising Lake Malawi Pilot in 2012.

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. Some maintenance work is now being carried out. 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

Achievements have been registered in the sense that surveys have been carried out and charts have been produced using the available personnel. However, it is obvious that there are no ready replacements for the staff. Thus more opportunities for training are still being sought in order to achieve continuity. Shortage of staff exists both in the hydrographic surveys and cartographic section.

Government is making all efforts to maintain a trained staff and in this sense one staff member from the hydrographic office has now been trained at the STC in Netherlands which training was 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. A short course in Electronic Navigation Charting has been organized by the IMO to be conducted in Durban, South Africa. It is still hoped that 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. Project assistance is being sought and we hope there will be light at the end of the tunnel.

Formal multilateral agreement between Malawi, Mozambique and Iceland (ICEIDA) through "charting of Lake Malawi (Niassa) project has provided professional development whereby Malawian hydrogrophers 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. We therefore await completion of a feasibility study in order to realize this navigation project.

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 chars 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. Incase 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.

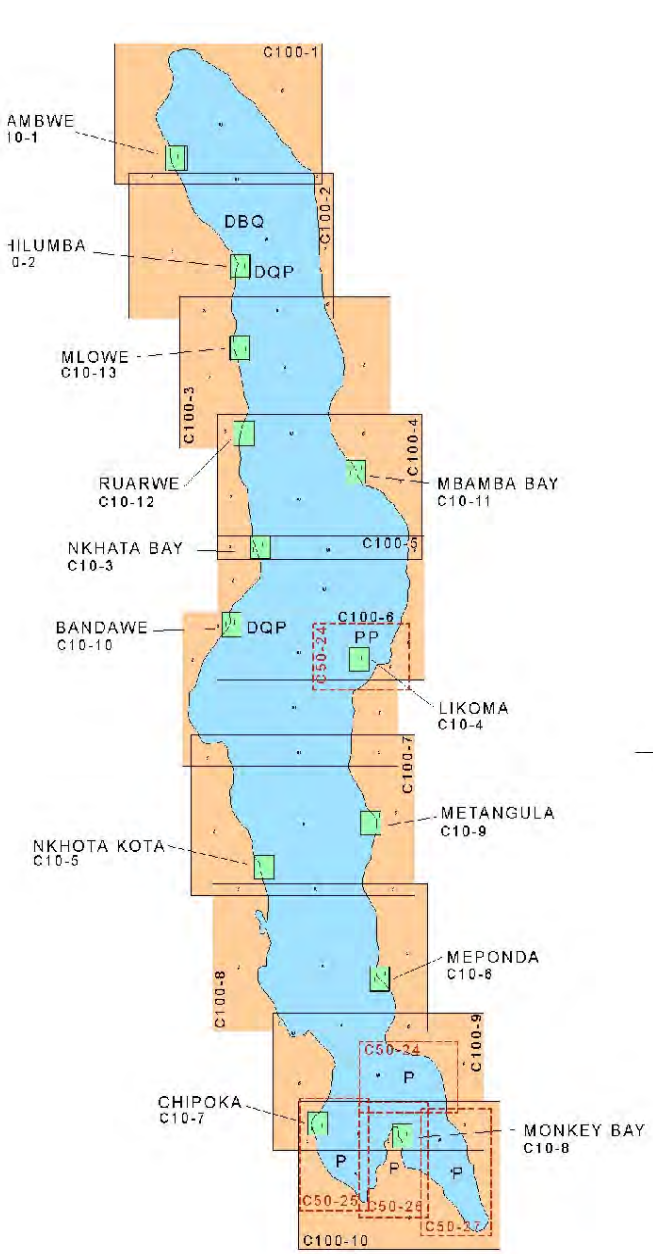
Problems encountered
- Lack of a current meter prevents the inclusion of water current information on the charts.
- The Grab Corer is still in-operational due to problem of the winch motor. The motor has not yet been replaced due to other priorities.

8. Concluding Remarks

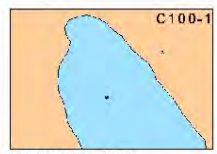
Successes have been registered by the Malawi hydrographic Unit, however a lot more still remains to be done in order for the HO to succeed in its endeavors of producing modern navigation charts, revising the Lake Malawi Pilot, providing a survey revision facility and monitoring services of the lake environment.

There is therefore need to invest in human resource and infrastructure development in order to overcome the problems mentioned above. To varying degrees of success the Malawi government has made efforts to overcome these problems. Malawi completed port construction at the port of Nsanje in expectation of the Shire/Zambezi waterway project and the hydrographic offices both in Malawi and Mozambique will play prominent roles during the feasibility studies to give advice to various players. It is envisaged that the sustainable activities on the waterway will transform the region surrounding this waterway in a significant manner in an area which is currently underdeveloped and faces various challenges socioeconomic challenges which it is hoped will become a thing of the past once the project commences. We aim to model ourselves on the other renowned and remarkable waterways in the world such as the Mississippi in the United States of America which is a viable example of integrated waterway management.

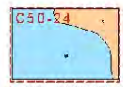
PROPOSED CHART INDEX



KEY



1:100,000 Chart



1:50, 000 Chart

1:10,000 Chart
C10-6

NOTES

DQP____Data acquired & Processed
DBQ____Data Being Acquired
PP_____Pending Printing
P Printed

Scale 1:2,500,000

APPENDIX 4 TO
FOE/HYD/R/320/19/1
DATED 12 May 2008

IHO Special Publication S-55 Update (Visit Malawi Apr / May 2008)

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Basic Data

Maritime Nation/Area	Nation or Area Code	Region ID	Nation or Area (N or A)	EEZ(sq km x 1000)	Length of Coastline (km)	Data for S-55 Edition No.	Latest Update	IHO Member State
Malawi	MW	AF	N	24,0	1290	3	May 2008	N

IHO S-55 Annex 1

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Hydrographic Resources

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

IHO S-55 Annex 2

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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 d<50m			State of Hydrography 50m<d<200m Surveys for areas between 0 and 200m			State of Hydrography d>200m		
	Y/N?	% adequate	% resurvey	% unsurveyed	% adequate A1	% resurvey B1	% unsurveyed C1	% adequate	% resurvey	% unsurveyed
Malawi		30	0	70	35	0	65	0	0	0

IHO S-55 Annex 3

IHO S-55

Summary Report on MARITIME SAFETY INFORMATION (MSI)

Nation/Area	INT Region	Local Warning	Coast Warning	NAVAREA Warning	Port Info	Master Plan	A1 Sea Area	A2 Sea Area	A3 Sea Area	NAVTEX	SafetyNET
Malawi	H	Partial	NO	NO	Partial						

IHO S-55

Summary Report on the Status of RNCs

In the table below, -1 has been used for Inland Waters

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

IHO S-55

Summary Report on the Status of ENCs

In the table below, -1 has been used for Inland Waters

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

IHO S-55

Summary Report on the Status of INT Charts

In the table below, -1 has been used for Inland Waters

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