SAIHC9-5.3B

REPUBLIC OF SOUTH AFRICA

SAN HYDROGRAPHIC OFFICE

NATIONAL REPORT

TO THE

9TH SOUTHERN AFRICA AND ISLANDS HYDROGRAPHIC
COMMISSION CONFERENCE (SAIHC)

18 - 19 SEPTEMBER 2012

(Mauritius)
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9th SAIHC MEETING
REPORT BY THE REPUBLIC OF SOUTH AFRICA

1. **SA Navy Hydrographic Office (SANHO)**

The SA Hydrographic Service is a government-funded service and is part of the SA Navy. The major assets for the Hydrographic Service are as follows:

One Hecla Class Hydrographic Survey Vessel, namely **SAS PROTEA**. She carries on board two smaller survey launches that are deployed for shallow water surveys. There is an additional launch on a trailer and equipment that is used as a mobile survey unit (MSU).

The Hydrographic Office, with the following principal functions: Conduct hydrographic surveys, produce paper nautical charts, electronic navigation charts (ENCs) and publications including List of Lights and Radio Signals, three volumes of Sailing Directions, maintaining a tide gauge network and provide tidal information, collect GEBCO data, issue monthly Notices to Mariners, Maritime Safety Information (MSI) and the provision of a Chart Depot service.

The officers and ship’s company of the survey vessel SAS PROTEA; and the staff members of the Hydrographic Office (SANHO) at Cape Town, Tokai.

**Personnel.**

The SANHO has four fully skilled marine cartographers working on paper chart production and one fully skilled marine cartographer working on ENC production. The five junior cartographers that completed the Cat-B Data Processing, Marine Cartography and Specialist ENC Modules presented by the UKHO have been suitably placed within the two departments but still need much more experience. However, they still need to be granted their Cat-B Certification from the UKHO.

2. **Hydrographic Surveys**

There are areas along the RSA southeast coast that have not been surveyed using electronic methods and last surveyed in the early 1900’s by hand lead line. This area is progressively being filled in by modern electronic methods. There is approximately another ten years of survey work remaining to cover the entire coast with modern survey methods. (Appendix A).

3. **Charts and Publications**

   a. **Charts**

   **International (INT) charts.** South Africa is the coordinator for charting Region H and the producer for 37 paper charts as part of the Region H International (INT) charting Scheme, of which 34 (92%) have been published. Three national paper charts have been allocated INT numbers and IHO adopted into the INT chart scheme. Some of these charts have undergone a second and in some cases, even a third round of revision.

<table>
<thead>
<tr>
<th>INT Chart No</th>
<th>SAN No</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium Scale : 1 : 300 000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
*2590  71  Kunene River to Sand Table Hill.
*2600  72  Sand Table Hill to Cape Cross.
*2610  73  Cape Cross to Conception Bay.
*2620  74  Conception Bay to Hottentot Point.
*2630  75  Hottentot Point to Chamais Bay.
*2640  76  Chamais Bay to Port Nolloth.
*2650  77  Port Nolloth to Island Point.
*2660  78  Island Point to Cape Deseada.
*2670  79  Cape Deseada to Table Bay.
*2680  80  Table Bay to Cape Agulhas.
*7510  81  Cape Agulhas to Cape St Blaize.
*7520  82  Cape St Blaize to Cape St Francis.
*7530  83  Cape St Francis to Great Fish Point.
*7540  84  Great Fish Point to Mbashe Point.
 7550  85  Mbashe Point to Port Shepstone.
*7570  87  Tugela River to Ponta do Ouro.

Small Scale : 1 : 1 000 000

2051  90  Baia dos Tigres to Walvis Bay.

Large Scale : Between 1 : 10 000 – 1 : 50 000

*2611  1001  Walvis Bay and Approaches (Chart withdrawn).
*2631  1002  Approaches to Lüderitz.
 2612  1004  Walvis Bay Harbour.
 2613  1005  Approaches to Walvis Bay.
*2671  1010  Approaches to Saldanha Bay.
*2673  1011  Entrance to Saldanha Bay.
*2672  1012  Saldanha Bay Harbour.
*2681  1013  Approaches to Table Bay.
*2682  1014  Table Bay Harbour.
*7521  1020  Mossel Bay and Approaches.
*7531  1024  Approaches to Port Elizabeth.
*7532  1025  Port Elizabeth and Bird Island Passage.
*7533  1026  Ngqura Harbour.
*7541  1027  East London and Approaches.
*7561  1030  Approaches to Durban.
*7562  1031  Durban Harbour.
*7572  1032  Approaches to Richards Bay.
*7571  1033  Richards Bay Harbour.

Note: * Indicates charts adopted by the UKHO.

The following paper charts are at early or advanced stages of production:

7560  86  Port Shepstone to Tugela River.
*7563  1029  Approaches to Durban Single Point Mooring (SPM).
*7745  2003  Marion and Prince Edward Islands.

* IHO adopted as new INT charts.

Region M:

9056  2004  Antarctica. Approaches to Dronning Maud Land.
National paper charts. The South African paper chart folio consists of some 100 national and international (INT) charts at various scale categories ranging from large scale harbour charts, port approach charts, medium scale coastal navigation charts to 1:10 (Million) small scale charts for passage planning around the southern tip of Africa and adjacent islands.

Namibia still remains the charting responsibility of South Africa and charting mainly consists of two hub ports, Walvis Bay and Lüderitz, while the coastline is covered by medium scale international (INT) paper charts. The SA national 1:150 000 scale coastal series have been discontinued along the Namibian coastline some years ago with the publication of the 1:300 000 scale INT charts. All paper charts are regularly maintained by the promulgation of monthly Notices to Mariners (NMs) and revised to meet with IHO international charting standards and to maintain standardization. The SANHO adopts a pro-active approach by visiting main activity areas from time to time to ensure that the most up to date information is available to the Hydrographic Office for promulgation.

Vessel Traffic Service (VTS) and Traffic Separation Schemes (TSS). Vessel Traffic Services (VTS) have been implemented at the main hub ports of Saldanha Bay, Table Bay, Port Elizabeth, Durban and Richards Bay. The port of Ngqura, 10 miles to the north of Port Elizabeth, is fully operational with a revised VTS system covering the approaches to both ports. The ports of Mossel Bay and East London has implemented VTS but is as yet not officially approved by the South African Maritime Safety Authority (SAMSA).

A Traffic Separation Scheme (TSS), which has been International Maritime Organisation (IMO) adopted, has been implemented off the south coast to ensure safe navigation of laden tankers north and south of the Alphard Banks and the FA Platform for east and west bound traffic. Due to the on-going oil exploration activities approximately 65 nautical miles south west of Mossel Bay, careful navigation is essential in these waters particular in the vicinity of the Oribi and Sable Oil Fields as well as the E.M. Control Buoy.

Small Craft Charts. The Hydrographic Office continues to maintain and provide small craft paper charts to the leisure market. These are unique in a sense that they cover general coastal areas at a scale of 1:200 000, are half standard chart size, provides condensed sailing directions, show seasonal wind roses, facility diagrams and detailed larger scale inset plans of fishing harbours, yacht clubs and marinas. All this information is on one sheet printed on the front and back providing a comprehensive user document. Six (6) of these charts have been published. Added, in similar format, is the popular leisure craft chart SAN 2051 of the Vaal Dam, one of South Africa’s largest inland dams situated approximately 80 kilometres south of Johannesburg in the Gauteng Province. Chart SAN 2053, the Gariep Dam was re-instated towards the end of 2011. It is located on the Orange River, situated about 35km north of Colesberg, which forms the provincial boundary between two provinces. Similar charts for other large inland dams are also been considered.

World Geodetic System (WGS 84). Prior to 1997 all navigational charts were referenced to the Clarke 1880 modified ellipsoid. With the advent of the Global Positioning System (GPS) the WGS84 ellipsoid as a reference for positioning has become the spheroid for all new charts and new editions. Forty seven charts (47%) have been published on WGS84 but, when considering small-scale charts where the WGS84 shift is considered negligible, the figure changes significantly to 88%. However, it will be several years before the South African paper chart folio, totalling some 100 charts, will be fully converted.

Print-on-Demand (PoD). The Office is currently producing paper charts using CorelDraw software. These digital files are used for PoD printing. Presently the office can provide 77 charts (77%) using this process. The office has acquired three AO inkjet printers (Two Epsons 9600/9800 and one HP 5200) to support an internal PoD facility.
**Electronic Navigational Charts (ENCs).** The SANHO utilizes dKart software for electronic navigational chart (ENC) production and conversion of paper survey records into digital format. This suite of software includes modules for sounding selection, colour banding, as well as a module for producing WECDIS based Additional Military Layer (AML) digital charts. DKart Hydrographer is also used to assess digitally captured survey data.

The SANHO currently has six dKart Editor licences, four dKart Publisher licences and one licence each of dKart Navaids, Catalogue Server and Archives. Validation tools used are dKart Inspector (built into Editor, one licence of Seven C’s Analyser and a Transas NaviSailor 3000).

**ENC Production**

South Africa has chosen the following paper chart - ENC relationship:

<table>
<thead>
<tr>
<th>Chart Series</th>
<th>ENC Usage Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAN Harbour charts</td>
<td>Harbour</td>
</tr>
<tr>
<td>SAN Approaches charts</td>
<td>Approaches</td>
</tr>
<tr>
<td>SAN 100 000 and 150 000 Series charts</td>
<td>Coastal</td>
</tr>
<tr>
<td>SAN 300 000, 600 000 Series</td>
<td>General</td>
</tr>
<tr>
<td>SAN 1 000 000 Series and all other small scales</td>
<td>Overview</td>
</tr>
</tbody>
</table>

The cells in the Harbour and Approaches bands are the equivalent of the paper chart wrt coverage area but cells in the Coastal, General and Overview usage bands are compiled from more than one paper chart. All cells conform to the current international guidelines for SCAMIN and data consistency.

**ENC Production Priority**

All South African and Namibian Ports and Approaches are fully covered by ENCs. In addition, all ENCs in the Coastal, General and in the Overview usage band have been published.

![Status of Harbour Usage Band Coverage](image1)

![Status of Approaches Usage Band Coverage](image2)

![Status of Coastal Usage Band Coverage](image3)

![Status of General Usage Band Coverage](image4)
Status of Overview Usage Band Coverage

South African ENC Products (as at 16 August 2012)

<table>
<thead>
<tr>
<th>IC-ENC</th>
<th>Cell Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZA500040</td>
<td>Saldanha Bay</td>
</tr>
<tr>
<td>ZA500050</td>
<td>Table Bay</td>
</tr>
<tr>
<td>ZA500070</td>
<td>Simon's Bay</td>
</tr>
<tr>
<td>ZA500090</td>
<td>Mossel Bay Harbour</td>
</tr>
<tr>
<td>ZA500120</td>
<td>Port Elizabeth Harbour</td>
</tr>
<tr>
<td>ZA500125</td>
<td>Ngqura Harbour</td>
</tr>
<tr>
<td>ZA500140</td>
<td>East London Harbour</td>
</tr>
<tr>
<td>ZA500160</td>
<td>Durban Harbour</td>
</tr>
<tr>
<td>ZA500170</td>
<td>Richards Bay Harbour</td>
</tr>
<tr>
<td>ZA5N0010</td>
<td>Walvis Bay Harbour</td>
</tr>
<tr>
<td>ZA5N0020</td>
<td>Lüderitz Harbour</td>
</tr>
<tr>
<td>ZA400040</td>
<td>Approaches to Saldanha Bay</td>
</tr>
<tr>
<td>ZA400050</td>
<td>Approaches to Table Bay</td>
</tr>
<tr>
<td>ZA400070</td>
<td>False Bay</td>
</tr>
<tr>
<td>ZA400090</td>
<td>Approaches to Mossel Bay</td>
</tr>
<tr>
<td>ZA400120</td>
<td>Approaches to Port Elizabeth</td>
</tr>
<tr>
<td>ZA400130</td>
<td>Bird Island Passage</td>
</tr>
<tr>
<td>ZA400140</td>
<td>Approaches to East London</td>
</tr>
<tr>
<td>ZA400150</td>
<td>Durban Oil Terminal SMB</td>
</tr>
<tr>
<td>ZA400160</td>
<td>Approaches to Durban</td>
</tr>
</tbody>
</table>
ZA400170 Approaches to Richards Bay
ZA4N0010 Approaches to Walvis Bay
ZA4N0020 Approaches to Lüderitz
ZA300010 Oranjemund to Skulpfonteinpunt
ZA300020 Hondeklipbaai to Olifantsrivier
ZA300030 Doringbaai to Yzerfonteinpunt
ZA300040 Dassen Island to Kaap Hangklip
ZA300050 Mudge Point to Cape Infanta
ZA300060 Cape Barracouta to Cape Seal
ZA300070 Storm Point to Port Alfred
ZA300080 Great Fish Point to Cape Morgan
ZA300090 Mboshe Point to North Sand Bluff
ZA300100 Port Shepstone to Tongaat Bluff
ZA300110 Tugela River to Cape St Lucia
ZA300120 Cape Vidal to Ponta do Ouro
ZA300300 Approaches to Dronning Maud Land
ZA3N0010 Kunene River to Sand Table Hill
ZA3N0020 Terrace Bay to Cape Cross
ZA3N0030 Farilhao Point to Conception Bay
ZA3N0040 Meob Bay to Hottentot Point
ZA3N0050 Douglas Point to Orange River
ZA200010 Orange River to Stompneuspunt
ZA200020 Cape Columbine to Cape Infanta
ZA200030 Cape Barracouta to Cape Padrone
ZA200040 Great Fish Point to Cape Hermes
ZA200050 South Sand Bluff to Ponta do Ouro
ZA2N0010 Kunene River to Palgrave Point
ZA2N0020 Haub River to Conception Bay
ZA2N0030 Meob Bay to Elizabeth Bay
ZA2N0040 Driemasterpunt to Orange River
ZA100010 Western Waters of South Africa
ZA100020 Southern Waters of South Africa
ZA100030 Eastern Waters of South Africa
ZA1N0010 Northern Waters of Namibia
ZA1N0020 Southern Waters of Namibia

Scope of ENC Work done

<table>
<thead>
<tr>
<th>Usage Band</th>
<th>Total Planned</th>
<th>Total Produced</th>
<th>% Coverage Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>5</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>General</td>
<td>9</td>
<td>9</td>
<td>100</td>
</tr>
<tr>
<td>Coastal</td>
<td>19</td>
<td>18</td>
<td>94.7</td>
</tr>
<tr>
<td>Approaches</td>
<td>12</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Harbour</td>
<td>11</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>Berthing</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>56</strong></td>
<td><strong>55</strong></td>
<td><strong>98.1%</strong></td>
</tr>
</tbody>
</table>

Outstanding cell production

ZA300200 Prince Edward and Marion Islands

Distribution of ENCs
South African commercial ENCs are distributed through IC-ENC (UK).

Dissemination of ENC and related information

The South African Hydrographic Office maintains its own web site (www.sanho.co.za) which provides information on its ENC program as well as information concerning ENC, Charts and Carriage Requirements, arising from the joint work of Primar, IC-ENC and the Working Group on Information (PSIWG).

b. Publications

The present status of most essential SANHO Publications is as given in the table below;

<table>
<thead>
<tr>
<th>SANHO Ref No</th>
<th>Title</th>
<th>Edition</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAN HO-1</td>
<td>South African List of Lights and Radio Signals.</td>
<td>2011</td>
</tr>
<tr>
<td>SAN HO-2</td>
<td>South African Tide Tables.</td>
<td>2012 &amp; 2013</td>
</tr>
<tr>
<td>SAN HO-3</td>
<td>Catalogue and Indexes of SAN Charts, ENCs and Hydrographic Publications.</td>
<td>2011</td>
</tr>
<tr>
<td>SAN HO-6(INT 1)</td>
<td>Symbols and Abbreviations used on SA Charts.</td>
<td>2011</td>
</tr>
<tr>
<td>SAN HO-15</td>
<td>International Regulations for Preventing Collisions at Sea 1972 (COLREGS).</td>
<td>2005</td>
</tr>
<tr>
<td>SAN HO-21</td>
<td>SA Sailing Directions Vol I – General Information.</td>
<td>2005</td>
</tr>
<tr>
<td>SAN HO-22</td>
<td>SA Sailing Directions Vol II – Namibia and West Coast.</td>
<td>2002</td>
</tr>
<tr>
<td>SAN HO-23</td>
<td>SA Sailing Directions Vol III – South and East Coasts.</td>
<td>2003</td>
</tr>
<tr>
<td></td>
<td>Annual Summary of SA Notices to Mariners.</td>
<td>2012</td>
</tr>
<tr>
<td></td>
<td>Cumulative List of SA Notices to Mariners.</td>
<td>2012</td>
</tr>
</tbody>
</table>

The above publications are maintained through the promulgation of monthly NM’s. Charts and Publication information and Tidal Data are also made available on the SANHO web site (www.sanho.co.za) and may be downloaded as convenient.

4. Capacity Building

Regional capacity building initiatives. SAIHC have identified Capacity Building initiatives with MSI as a very important first phase component. In September 2012 advisory visit teams will visit the Seychelles and Mauritius with Tanzania and Kenya to follow in November. Visits to Angola, Mozambique, Uganda and the Comoros are as yet unscheduled. Member States are encouraged to establish contact and sensitize their governments about the importance of hydrography. The main objective is to utilise regional projects to facilitate the improvement of hydrography through capacity building.

Training. The SAIHC Capacity Building management plan included two WWNWS-MSI training courses over the past years in Mozambique and Namibia. Both courses was rated a success. It is hoped that it stimulated a capability increase through the empowerment of national co-ordinators. The ultimate aim of capacity building is to increase MSI awareness in national waters. All member states are encouraged to submit this initiative through the RHC (SAIHC).

A Phase 1 Skills and Chart Awareness Course have been approved for SAIHC for 2012. South Africa will host this course which is scheduled for 26 – 30 November 2012 in Fish Hoek, Cape Town.

Hydrographic Survey Courses and Data Processing and Marine Cartography Modules were presented at SANHO in 2010 and 2011. See tables below:
Hydrographic Surveying

<table>
<thead>
<tr>
<th>Course</th>
<th>Period</th>
<th>Participants</th>
</tr>
</thead>
</table>

Data Processing and Marine Cartography

<table>
<thead>
<tr>
<th>Course</th>
<th>Period</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrographic Data Processing and Marine Cartography including specialist ENC training (Modules 1, 2 &amp; 3). Presented by the UKHO in South Africa.</td>
<td>17 May 2010 – 14 Oct 2011</td>
<td>South Africa (8)</td>
</tr>
</tbody>
</table>

5. **IHO Special Publication C-55**

The South African Hydrographic Office acknowledges the importance of the constant review of C-55 to improve hydrographic services along the maritime routes in the region. A comprehensive update was provided to the IHO in 2011. The status of Namibia is included in South Africa’s assessment.

6. **Oceanographic activities**

**General Bathymetric Chart of the Oceans (GEBCO).** Since 1991, South Africa has, in accordance with IHO Resolutions, ceased to maintain the 20 GEBCO Collector Plotting Sheets (passage soundings) for which the RSA is responsible. The analogue sheets of South Africa’s GEBCO data holdings have been converted into digital format, which will greatly contribute to the use of this data in digital products and the production of the International Bathymetric Chart of the West Indian Ocean (IBCWIO) project.

**IBCWIO Project (International Bathymetric Chart of the West Indian Ocean).** This is a joint mapping project between the IHO and the International Oceanographic Commission (IOC) to chart the eastern side of Africa, from approximately 13° N to 36° S extending seaward to as far as 68° E, at a scale of 1:1 000000. Of the 21 sheets needed, South Africa undertook to produce sheets 16-21 inclusive. South Africa has suspended work on this project due to its lack of personnel and prioritising of its ENC production program.

**Tide Gauge Network.** The tide gauge network is critical in the calculation of the tidal predictions for South Africa and Namibia, and spans from Walvis Bay on the West Coast to Richards Bay on the East Coast. Since the end of 2001 the tide gauge network has progressively being replaced with modern radar type tide gauges. The South African Navy Tide Gauge Network has now been completely upgraded with all ten tidal stations having radar type gauges. The South African Navy Tide Gauge Network communication method is in the process of being upgraded from land lines to GSM communication. Biannual calibration and maintenance site visits are carried out by the Tidal Department.
At the request of the IOC, satellite transmitters were installed at 3 tidal stations, two of which are Global Sea level Observing System (GLOSS) stations. The 1min data from Durban, Port Elizabeth and Simon's Town is transmitted in real time for use in the Indian Ocean Tsunami Early Warning System (IOTWS).

Chart Datum for all SA Ports was changed from a standard 0.900m below MSL to Lowest Astronomical Tide (LAT) as from 1 January 2003.
APPENDIX A:
STATUS OF HYDROGRAPHIC SURVEYS
ALONG THE SOUTHERN AFRICAN COAST

- **ADMIRALTY FAIR CHARTS (LEAD LINE)**
- **FAIR CHARTS < 1960 (ECHO SOUNDER, HORIZONTAL SEXTANT)**
- **FAIR CHARTS > 1960 (ECHO SOUNDER, ELECTRONIC POSITIONING EQUIPMENT)**
- **SURVEYS IN HAND (2012)**

Key locations:
- Kunene River
- Walvis Bay
- Lüderitz
- Orange River Mouth
- Cape Town
- Mossel Bay
- Port Elizabeth
- East London
- Richards Bay
- Durban
- Port Udo Qibo
- 200 NM EEZ