

**19TH MEETING OF THE SOUTHERN AFRICAN AND ISLANDS
HYDROGRAPHIC COMMISSION (SAIHC19)**

NATIONAL REPORT FROM REPUBLIC OF SOUTH AFRICA TO THE SAIHC19

Reference: IHO Resolution 2/1997 as amended

EXECUTIVE SUMMARY

1. HYDROGRAPHIC OFFICE / SERVICE

- a. **Name of the institution.** South African Navy Hydrographic Office (SANHO)
- b. **Description.** 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:

Hydrographic Survey Vessel: One Hecla Class Hydrographic Survey Vessel, named **SAS PROTEA**. She carries onboard two smaller survey motor boats that are deployed for shallow water surveys. There is an additional survey motor boat on a trailer and equipment that is used as a mobile survey unit (MSU).

Hydrographic Office, with the following principal functions:

- i. Conduct hydrographic surveys;
- ii. Produce paper nautical charts and electronic navigation charts (ENCs);
- iii. Produce hydrographic publications including List of Lights and Radio Signals, three volumes of Sailing Directions;
- iv. Maintain a tide gauge network and provide tidal information;
- v. Collect GEBCO data;
- vi. Issue monthly Notices to Mariners;
- vii. Provide hydrographic survey training;
- viii. Provide a Maritime Safety Information (MSI) and
- ix. Provide a Chart Depot and Chart Agent service.

Personnel, with the following principal functions:

- i. Cartographic Personnel. The SANHO has 6 degree/national diploma qualified marine cartographers and 7 junior IHO/FIG CAT B qualified cartographers in the Chart Production Department working on paper chart and ENC production.
- ii. Survey Personnel. The SA Navy Hydrographic Service has 4 IHO/FIG CAT A qualified survey officers and 1 IHO/FIG CAT B survey officer, supported by 9 survey officers with Basic Hydrographic Survey Training. The team is further assisted with 21 qualified survey recorders.

- c. **Submitted by.** Commander Christoff Theunissen, hydrosan@iafrica.com

Detailed information to update IHO Publication P-5 (*Yearbook*) is submitted in Annex A.

2. HYDROGRAPHIC SURVEYS

a. Coverage of surveys.

- i. Status of surveys and survey data. There are areas along the RSA south-east coast that were surveyed in the early 1900's by lead line and sextant. This area is progressively being filled in by surveys utilizing modern electronic surveying equipment and methodology. Along the Namibian coast in the area south of Walvis Bay to Orange River, modern systematic surveys are required to replace the old German Government charts that currently serve as source in this area (Diagram 1).

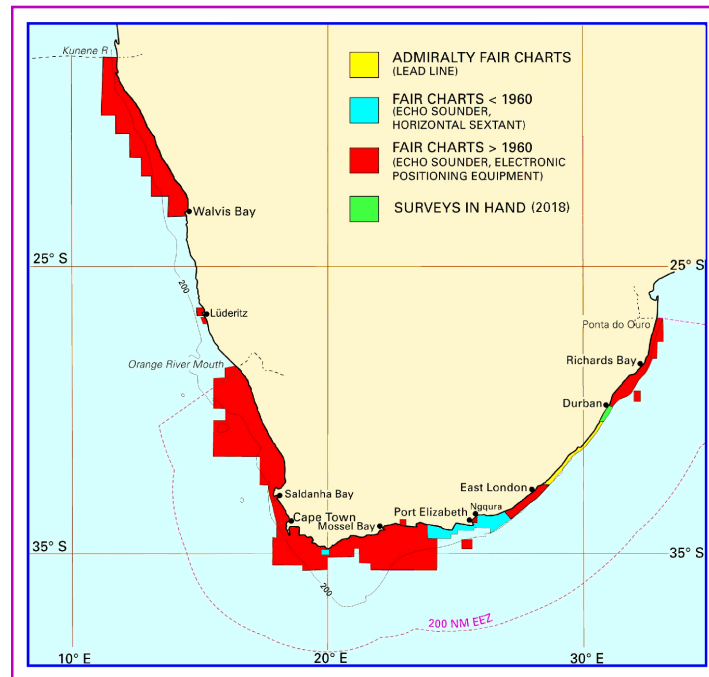


Diagram 1.

- ii. New Surveys. No new surveys were conducted over the reporting period.

b. New technologies and /or equipment. The replacement of legacy cartographic software with a fully integrated software solution catering for paper charts and electronic navigation charts was addressed through the Hydrographic Capability Replacement Project. Teledyne CARIS chart production software has been installed at the SANHO and will be fully integrated with the new survey acquisition and processing software on board the new HSV and SMBs, realising the “ping to chart” philosophy and capability. This will also assist in the collection and formatting of geospatial data in aid of marine spatial planning. The acquisition of high-end large format inkjet printers to support the print-on-demand (POD) requirements of paper chart products was also being addressed as a priority through the Hydrographic Capability Replacement Project. Procurement for the new S100 standard development software package is underway. The SANHO has developed a Roadmap and Implementation Plan for the introduction of the S-100 family of services and standards (see para. 3.a. Ongoing/Outstanding ENC production).

c. **New ships.** Also as part of the Hydrographic Capability Replacement Project, the acquisition of a new hydrographic survey vessel and 3 x survey motor boats is well underway, and is intended to be completed by 2025. Operational Test and Evaluation of the first SMB has commenced before it will be accepted into service by the SANHO.

d. **Crowdsourced and satellite-derived bathymetry - national policy.** Approval has been granted to the SANHO to vote in favour of CSB activities within South African national waters of jurisdiction, excluding the Territorial Waters, but extending from the Contiguous Zone to the EEZ only. Approval will increase bathymetric data in South Africa's national charting area of responsibility, as well as contribute to the population of GEBCO Project charts under the Republic's responsibility and Seabed 2030 initiatives. Neither the safety of navigation nor national security is affected by CSB activities from the Contiguous Zone to the EEZ as described above.

Detailed information about surveys to update IHO Publications P-5 (Yearbook) and C-55 (Status of Hydrographic Surveying and Charting Worldwide) is submitted in Annexes A and B, respectively.

e. **Challenges and achievements.** As noted.

3. NEW CHARTS & UPDATES

a. **Electronic Navigational Charts (Coverage, Gaps and Overlaps).** Currently the SANHO utilizes Teledyne CARIS production software for electronic navigational chart (ENC) production and maintenance consisting of five HPD Source Editor licences and three HPD Product Editor licences. ENC validation tools used by SANHO are dKart Inspector, one licence each of Seven C's Analyser and eGlobe (ECDIS).

ENC Production. South Africa has the following paper chart - ENC relationship:

<i>Chart Series</i>	<i>ENC Usage Band</i>
SAN Harbour charts	Harbour
SAN Approaches charts	Approaches
SAN 100 000 and 150 000 Series charts	Coastal
SAN 300 000, 600 000 Series	General
SAN 1 000 000 Series and all other small scales	Overview

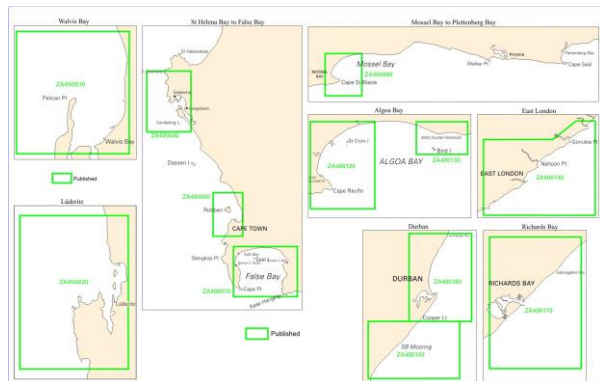
All ENCs conform to the current international guidelines for SCAMIN and data consistency. In addition, SAN ENCs also encode M_SREL (survey reliability) and CATZOC in the Harbour, Approaches and Coastal usage bands and maintain the products for (T) and (P) notices.

ENC Coverage. The following diagrams below graphically illustrate the South African and Namibian ENC coverage:

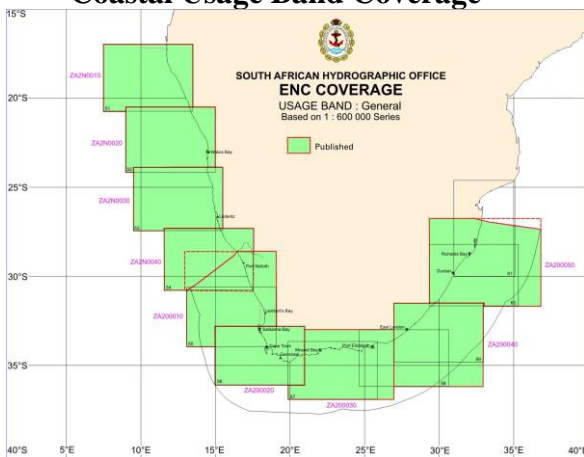
Harbour Usage Band Coverage



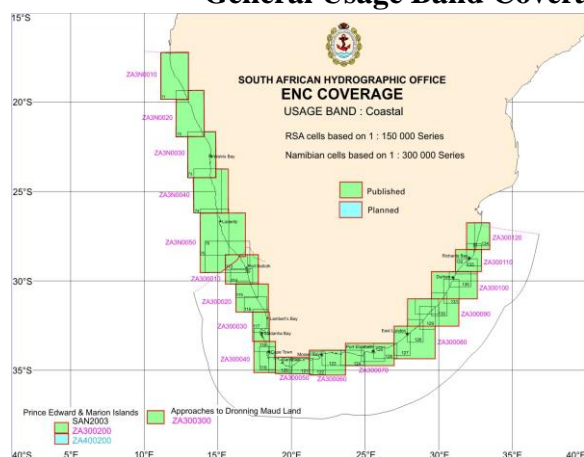
Approaches Usage Band Coverage



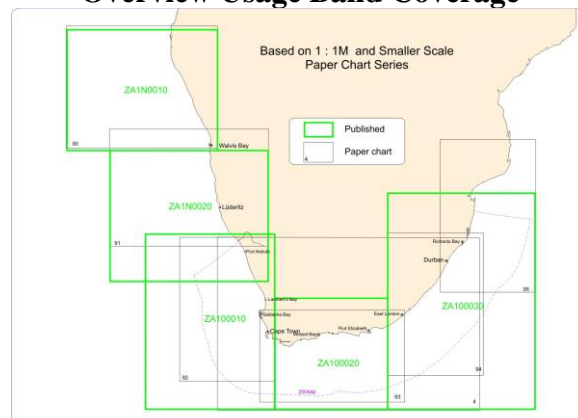
Coastal Usage Band Coverage



General Usage Band Coverage



Overview Usage Band Coverage



South African and Namibian ENC Products (as at 31 July 2023).

Note: Text highlighted in **bold and red** is new work since the previous SAIHC meeting.

<i>IC-ENC Product No</i>	<i>Cell Title</i>	
ZA500040	Saldanha Bay	
ZA500050	Table Bay	(NE published 2023)
ZA500080	Simon's Bay	
ZA500090	Mossel Bay Harbour	
ZA500120	Port Elizabeth Harbour	
ZA500125	Ngqura Harbour	
ZA500140	East London Harbour	
ZA500160	Durban Harbour	
ZA500170	Richards Bay Harbour	
ZA5N0010	Walvis Bay Harbour	
ZA5N0020	Lüderitz Harbour	(NE published 2022)
ZA400040	Approaches to Saldanha Bay	
ZA400050	Approaches to Table Bay	
ZA400070	False Bay	(NE published 2022)
ZA400090	Approaches to Mossel Bay	
ZA400120	Approaches to Port Elizabeth	
ZA400130	Bird Island Passage	(NE published 2022)
ZA400140	Approaches to East London	
ZA400150	Durban Oil Terminal SMB	
ZA400160	Approaches to Durban	
ZA400170	Approaches to Richards Bay	
ZA4N0010	Approaches to Walvis Bay	
ZA4N0020	Approaches to Lüderitz	(NE published 2022)
ZA400200	Approaches to Transvaal Cove	(NE published 2022)
ZA300010	Oranjemund to Skulpfonteinpunt	(NE published 2022)
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	(NE published 2023)
ZA300080	Great Fish Point to Cape Morgan	
ZA300090	Mbashe 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	(NE published 2022)
ZA300200	Prince Edward and Marion Islands	(NE published 2022)
ZA300300	Approaches to Dronning Maud Land	(NE published 2022)
ZA3N0010	Kunene River to Sand Table Hill	(NE published 2022)
ZA3N0020	Terrace Bay to Cape Cross	(NE published 2022)
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	(NE published 2022)
ZA1N0010	Northern Waters of Namibia	(NE published 2023)
ZA1N0020	Southern Waters of Namibia	(NE published 2023)

Scope of ENC Work done.

Usage Band	Total Produced	% Coverage Available
Overview	5	100
General	9	100
Coastal	19	100
Approaches	13	100
Harbour	11	100
Berthing	0	0
Total	57	100%

Ongoing/Outstanding ENC production.

- i. S100 Roadmap and Implementation Plan. The roadmap for SANHO 's S-100 implementation has been drafted and approved with five identified products of interest, namely S-101, S102, S122, S-124 and S-104. The S-101 implementation plan has been submitted to the hydrographer for approval. The timeline for implementation relies on the acquisition of the S100 software, and the SANHO aims to start producing S100 compliant products by 2024, starting with S101.
 - ii. Vectorising. The project to vectorise paper charts information within the CARIS HPD is in progress. Larger scale paper charts are prioritised. The SANHO aims to achieve 100% vectorisation by the end of 2024.
- b. **ENC Distribution method.** South African commercial ENCs are distributed through IC-ENC. The South African Hydrographic Office maintains its own web site (www.sanho.co.za) which provides information concerning ENC, Charts and Carriage Requirements. Information on MSI, chart products (paper and ENCs), publications and tidal data are also made available on the SANHO web site.
- c. **RNCs.** SANHO does not produce RNCs.

d. **International (INT) Charts.** South Africa is the coordinator for charting Region H and the designated producer of 46 paper charts in this scheme which have been produced and published. Some of these charts have undergone a second and in some cases, a third round of revision. The 1:1 000 000 INT series replaced the 1:600 000 national paper chart series on completion of INT 7052 (SAN 95) in December 2020.

Area H:

Note: * Indicates charts adopted by the UKHO. Text highlighted in **bold and red** is new work since the previous SAIHC meeting.

Medium Scale : 1:300 000

<i>INT No</i>	<i>SAN No</i>	<i>Title</i>
*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
*7560	86	Port Shepstone to Tugela River
*7570	87	Tugela River to Ponta do Ouro
*7580	88	Jesser Point to Boa Paz

Small Scale : 1:1 000 000

<i>INT No</i>	<i>SAN No</i>	<i>Title</i>
2051	90	Baia dos Tigres to Walvis Bay
2052	91	Walvis Bay to Orange River
2053	92	Orange River to Table Bay
7050	93	Table Bay to East London
7051	94	East London to Richards Bay
7052	95	Durban to Inhambane

Small Scale : 1:3 500 000

<i>INT No</i>	<i>SAN No</i>	<i>Title</i>
*204	27	Walvis Bay to Maputo
*700	28	Port Elizabeth to Mauritius

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

<i>INT No</i>	<i>SAN No</i>	<i>Title</i>
*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
*7563	1029	Approaches to Durban – Oil Terminal SMB
*7561	1030	Approaches to Durban
*7562	1031	Durban Harbour
*7572	1032	Approaches to Richards Bay
*7571	1033	Richards Bay Harbour
7745	2003	Prince Edward and Marion Islands

e. **National paper charts.** The South African paper chart folio currently consists of 94 charts; 46 of which are international (INT) charts. Planned charts at various scales and categories as detailed in the table below:

PLANNED CHARTS		
	NC	NE
INT Small Scale	0	0
INT Large Scale	0	0
National Coastal	0	19
Inland Waters	5	N/A
Small craft	3	2
TOTAL	8	21

Namibia still remains the charting responsibility of South Africa and chart coverage mainly consists of harbour and approaches charts of the two ports, Walvis Bay and Lüderitz, while the coastline is covered by medium scale international (INT) paper charts. All paper charts are regularly maintained by the promulgation of monthly Notices to Mariners (NMs). The SANHO adopts a pro-active approach by visiting areas and ports when necessary, to ensure that the most up to date information is available to the Hydrographic Office for product updating.

World Geodetic System (WGS 84). Of the 36 SAN charts which fall into the category of scales larger than 1:150 000, only three (8%), namely SAN 150, 1009 and 1022 are still based on Clarke 1880 spheroid.

Vessel Traffic Service (VTS) and Traffic Separation Schemes (TSS). Vessel Traffic Services (VTS) have been implemented at the ports of Walvis Bay, Saldanha Bay, Table Bay, Port Elizabeth and Ngqura, Durban and Richards Bay. The ports of Mossel Bay and East London has implemented VTS but is not officially approved by the South African Maritime Safety Authority (SAMSA). In 2019, the port of Walvis Bay implemented the TSS which is fully operational.

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.

f. **Other charts, e.g. for leisure craft**. The Hydrographic Office continues to maintain and provide small craft paper charts to the leisure market. These are half the standard chart size and are unique in a sense that they cover general coastal areas by a main chart at scales of between 1:200 000 to 1:260 000, with condensed sailing directions, seasonal wind roses, facility diagrams and detailed larger scale inset plans of fishing harbours, yacht clubs and marinas on the reverse side. To date six charts have been published. Published leisure craft charts of South Africa's largest inland dams provide coverage of the Vaal Dam (SAN 2051), Gariep Dam (SAN 2053) and the Vanderkloof Dam (SAN 2054). As part of the newly created South African Co-operative Inland Waterway Safety Programme, there is a navigational requirement to produce charts covering the Hartebeespoort and the Theewaterskloof Dams. Survey data for the Hartebeespoort Dam has been received and production planning for a new chart is currently in progress. The SANHO is also involved closely with SAMSA's initiative to provide aids to navigation for Inland Waters, including Knysna, Plettenberg Bay (Keurbooms River Estuary), Witsand (Breede River mouth), Sedgefield (Swartvlei River Estuary), Veldrift (Berg River mouth) and Kleinmond. To date, the navigation aid for Swartvlei River Estuary has been completed and published in November 2021, with a new edition published in March 2023, with production on Keurbooms River Estuary well underway and scheduled for publication in 2023.

g. **Challenges and achievements**. As noted.

Detailed information about charting to update IHO Publications P-5 (*Yearbook*) and C-55 (*Status of Hydrographic Surveying and Charting Worldwide*) is submitted in Annexes A and B, respectively.

4. PUBLICATIONS

a. **New Publications**. Nil.

b. **Updated publications**. Publications are maintained through the promulgation of monthly NM's in paper format (available through SANHO Chart Agents) and in PDF format, which can be downloaded from the SANHO web site (www.sanho.co.za).

The present status of SANHO Publications is as given in the table below (**Note:** Text highlighted in **bold and red** is new work since the previous SAIHC meeting):

SANHO Ref No	Title	Edition
SAN HO-1	South African List of Lights and Radio Signals	2022
SAN HO-2	South African Tide Tables	2023
SAN HO-3	Catalogue and Indexes of SAN Charts, ENC's and Hydrographic Publications	2023
SAN HO-6 (INT 1)	Symbols and Abbreviations used on SA Charts	2017

SAN HO-15	International Regulations for Preventing Collisions at Sea 1972 (COLREGS)	2020
SAN HO-21	SA Sailing Directions Vol I – General Information	2005
SAN HO-22	SA Sailing Directions Vol II – Namibia and West Coast	2014
SAN HO-23	SA Sailing Directions Vol III – South and East Coasts	2014
-	Annual Summary of SA Notices to Mariners	2023
-	Cumulative List of SA Notices to Mariners (updated monthly)	2023

c. **Means of delivery, e.g. paper, digital.**

SANHO Ref No	Title	Format
SAN HO-1	South African List of Lights and Radio Signals	Paper
SAN HO-2	South African Tide Tables	Paper
SAN HO-3	Catalogue and Indexes of SAN Charts, ENCs and Hydrographic Publications	Digital
SAN HO-6 (INT 1)	Symbols and Abbreviations used on SA Charts	Paper
SAN HO-15	International Regulations for Preventing Collisions at Sea 1972 (COLREGS)	Paper
SAN HO-21	SA Sailing Directions Vol I – General Information	Paper
SAN HO-22	SA Sailing Directions Vol II – Namibia and West Coast	Paper
SAN HO-23	SA Sailing Directions Vol III – South and East Coasts	Paper
-	Annual Summary of SA Notices to Mariners	Digital
-	Cumulative List of SA Notices to Mariners	Digital

All digital publications are available in PDF format for downloading from the SANHO web site (www.sanho.co.za).

d. **Challenges and achievements.** The SA Navy Printing Unit (NPU) in Simon's Town is the primary means of chart and publication printing. However, the onboard POD facility, through the rejuvenation project, is now able to meet the day-to-day demands for paper chart stock replenishment, and not publications. Currently the SANHO POD facility is not capable of printing and/or procuring publications, and this remains a challenge if/when NPU cannot meet SANHO printing requirements.

Detailed information to update IHO Publication P-5 (Yearbook) is submitted in Annex A.

5. MSI

a. **Existing infrastructure for transmission.** The SANHO, Coordinator of NAVAREA VII, in conjunction with the South African Meteorological Service, promulgates and disseminates shipping safety messages and weather information. Cape Town Radio, via Telkom Radio Services, is the GMDSS service provider and as such, transmits all MSI on behalf of the Coordinator.

SafetyNET II

MSI transmission is to Indian Ocean Region (IOR) and to Atlantic Ocean Region East (AOR-E).

Meteorological Forecasts and NAVAREA VII Warnings: 0940 and 1940 UTC.

Land Earth Station 12 Burum; Service Provider: Stratos Mobile Networks.

SafetyCAST

SafetyCAST satellite broadcast service provider: Iridium.

Meteorological Forecasts and NAVAREA VII Warnings: 0940 and 1940 UTC.

These broadcasts form part of NAVAREA VII and Iridium test and evaluation operations.

NAVTEX

NAVTEX coverage out to 200 nm from the Namibian and South African Coasts is passed from the Coast Radio Stations at Cape Town (C), Port Elizabeth (I) Durban (O) and Cape Columbine (U). The Coast Radio Station at Walvis Bay, Namibia (B) NAVTEX service is operational since 28 June 2019. Cape Town Radio includes Namibian Maritime Safety Information with its scheduled NAVTEX and SafetyNET II MSI broadcasts.

Station	Transmitter Identification Character (T.I.C) – B1 Character	Contact No
Walvis Bay Maritime Radio	B	+264 64 203581 (24H) Mobile: +264 811242697
Cape Town	C	+27 21 551 0700
Port Elizabeth	I	Port Elizabeth, Cape Columbine and Durban is remotely controlled from CT Radio.
Durban	O	
Cape Columbine	U	

Radio Telephony

South Africa

For the benefit of non-GMDSS adapted vessels, the Cape Town, Port Elizabeth and Durban Radio Coastal Weather Bulletins and Navigational Warnings in force are combined and presented as one single-voice broadcast from Cape Town Radio at 1015 and 1815 UTC daily. The coastal weather report as at 1200 UTC is broadcast at 1333 UTC. Transmission is on HF on 4375, 8740 and on 13146 kHz and on 29 VHF traffic channels sited around the South African coast from Alexander Bay in the West to Kosi Bay in the East.

Namibia

All RT MSI broadcasts are on VHF LZ Ch23; WVS Ch26 & 27 and on HF: 4357 & 8719 kHz

0903 UTC: Navigational Warnings

0935 UTC: Weather Forecasts and Traffic List

1235 UTC: Coastal Weather Reports

1635 UTC: Weather Forecasts and Traffic List

Newly received navigational warnings are broadcast on receipt and thereafter are included in the once daily navigational warning broadcast at 0903 UTC.

Geographical Limits of NAVAREA VII:

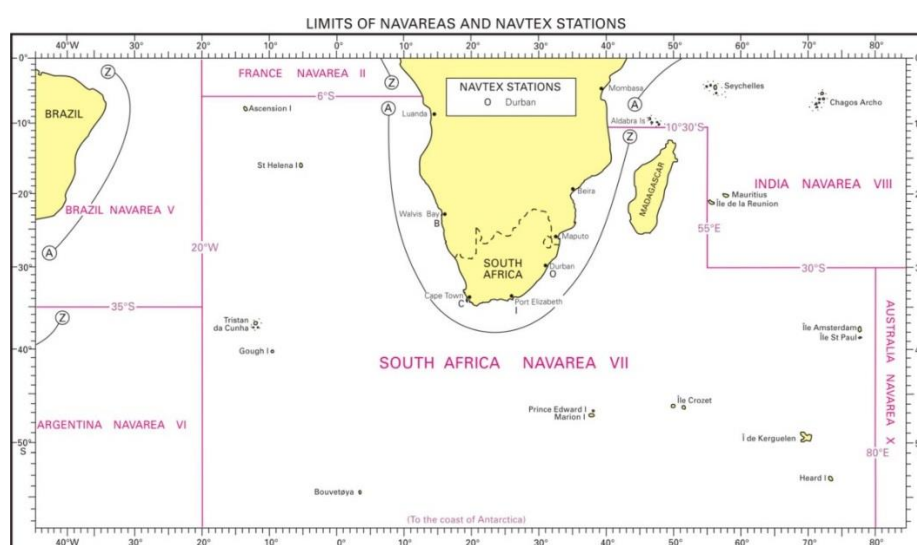
Southern Africa – South Atlantic Ocean (AOR-E):

6° 00'S, 020° 00'W (Angola international border with The Democratic Republic of the Congo (DRC),
(West Coast) to the coast of Antarctica

and

Southern Africa – Indian Ocean (IOR):

10° 30'S, 055° 00'E (Mozambique international border with Tanzania, (East Coast) to
30° 00'S, 055° 00'E to
30° 00'S, 080° 00'E to the coast of Antarctica.



b. **Statistics on work of the NAVAREA VII Coordinator.** The following table shows the number of SafetyNET II and SafetyCAST messages that were transmitted within NAVAREA VII (from the draft WWNWS15 Self-Assessment 4-8 September 2023):

	2020	2021	2022	2023
SafetyNET II	366	362	476	232 (31/07/2023)
SafetyCAST	98 (excluding test broadcasts)	362	476	232 (31/07/2023)
Coastal Navigational Warnings	752	487	683	333 (31/07/2023)

c. **New infrastructure in accordance with GMDSS Master Plan.** South Africa has participated in Iridium training in June 2020, and again refresher training in April 2021. No agreement between South Africa (represented by Telkom Radio Services) and Iridium has been signed yet. Despite not having an agreement in place, South Africa commenced with broadcast trials in April 2021, with Telkom Radio Services broadcasting all NAVAREA VII messages as well as METAREA messages, and the SANHO broadcasting test messages while monitoring Telkom Radio Services' broadcasts. There has been no issues of note, and Iridium has reported that the system is functioning as designed, with periodic remote checks on NAVAREA/METAREA VII broadcasts. There has also been several commercial vessels that has confirmed receipt of Iridium broadcasts

within NAVAREA VII as promulgated. South Africa will consider IMO and IHO directives regarding the implementation of Iridium as a GMDSS provider.

d. **Challenges and achievements.** As noted.

Detailed information about MSI to update IHO Publication C-55 (Status of Hydrographic Surveying and Charting Worldwide) is submitted in Annex B. The national self-assessment of MSI is submitted in Annex C.

6. 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. The table with the latest information to update IHO Publication C-55 (Status of Hydrographic Surveying and Charting Worldwide) is provided in Annex B.

7. CAPACITY BUILDING OFFER OF AND/OR DEMAND FOR CAPACITY BUILDING

a. **Offer of and/or demand for Capacity Building.** The SANHO, in collaboration with IMT, developed and launched a MSI eLearning initiative in 2021. The objective of the eLearning package is to facilitate basic MSI capacity building initiatives, especially for the region. This initiative was strongly supported by both Chairpersons of the WWNWS and SAIHC. Member States are invited to contact the SANHO to make use of this eLearning package. South Africa has also joined the IHO Capacity Building eLearning Project Team to share information and knowledge. A similar eLearning package is under development for basic Tidal and Oceanography theory, as well as basic hydrographic surveying principles and practices.

b. **Training received, needed, offered.**

i. **Marine Cartography.** Over the reporting period 2 junior cartographers have completed their National Diploma (Cape Peninsula University of Technology, Industrial Technicians in marine cartography) studies and are in the process of compiling their folios of evidence at the SANHO, with 1 junior cartographer commencing her studies this year.

c. **Status of national, bilateral, multilateral or regional development projects with a hydrographic component. (In progress, planned, under evaluation or study).**

iii. **Hydrographic Survey Training.** The SANHO is striving to achieve a FIG/IHO Category B status for the senior Learning Opportunities. Furthermore the state of the art facility with software packages installed under the Hydrographic Capability Replacement Project, makes the SANHO the only facility in SADC capable of conducting training for this region. This is a marketable tool that can be utilised by the region and industry in capacitating and training mariners in Hydrographic skills. A Basic Hydrographic Survey training course that will provide tailored hydrographic survey and tidal information training to enable surveyors to conduct basic level

survey operations in the SADC region is to be developed. These medium to long term initiatives, and are currently in the study and planning phase.

- iv. Cartographic Training. Marine Cartographers are attending the Cape Peninsula University of Technology to qualify as Industrial Technicians in marine cartography.

- d. Description of requests to be considered by the IHO/CBSC. Nothing to report.

8. OCEANOGRAPHIC ACTIVITIES

- a. General. The SANHO conducts limited oceanographic activities, the most notable being the maintenance of a tide gauge network along the South African coast, as well as GEBCO/IBC activities.

- b. GEBCO/IBC's activities, GEBCO Seabed 2030 activities. 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.

- i. Status of data collection. The SANHO, in collaboration with NOAA and Institute of Maritime Technology (IMT), is conducting a CSB data collection pilot project as part of Seabed 2030. IMT has received 100 data loggers from NOAA, field trials was completed and there are currently 5 data loggers deployed on vessels of opportunity. The SANHO has also received bathymetry data from several external sources, which have been collated into a single data set and submitted to GEBCO as part of Seabed 2030 (Diagram 3) in 2022. Note the detailed CSB report submitted to SAIHC19 for further details.

- c. 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. The Tide Gauge Network has been completely upgraded with all twelve tidal stations having radar type gauges. The South African Navy Tide Gauge Network communication method has been upgraded from land lines to GSM communication. Solar power has been installed in Port Nolloth (complete reinstallation of entire gauge), Port of Cape Town, Simon's Town, and the Port of Port Elizabeth (Gqeberha) and will be expanded throughout the network. Biannual calibration and maintenance site visits are carried out by the Tidal Department. At the request of the IOC, satellite transmitters were installed at three tidal stations, two of which are Global Sea Level Observing System (GLOSS) stations. The one minute data from the Port of Port Elizabeth (Gqeberha) 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 is Lowest Astronomical Tide (LAT) as from 1 January 2003.

- d. New Equipment. Nothing to report.

- e. Challenges and achievements. As noted.

9. SPATIAL DATA INFRASTRUCTURES

- a. **Status of MSDI.** SANHO is fully committed to providing continued support to ensure the successful implementation of initiative 6, Marine Spatial Planning (MSP) and initiative 10 Oceans and Coastal Information Management System (OCIMS) project by providing access to accurate, complete, current and well maintained spatial information. SANHO plays a crucial role in MSP and is actively involved by attending meetings of the National Working Group (NWG) and also participating in the South African Spatial Data Infrastructure (SASDI) workshops and meetings to ensure compliance and adherence to policies, standards and specifications for the base data sets, in order to accomplish South Africa's national and international priorities.
- b. **Relationship with the NSDI.** Data sharing subject to approval of the National Hydrographer.
- c. **Involvement in regional or global MSDI efforts.** SANHO is fully committed to providing continued support and considers all requests for MSDI data sharing, subject to approval of the National Hydrographer.
- d. **National implementation of the Shared Data Principles – including any national data policy and impact on marine data.** Compliance with the Spatial Data Infrastructure Act, 2003 (Act No. 54 of 2003), Compliance with SANS 1878 and ISO 19115 for metadata.
- e. **MSDI national portal.** Oceans and Coastal Information Management System (OCIMS)
- f. **Best practices and lessons learned.** Nothing to report.
- g. **Challenges and achievements.** SANHO is fully committed to providing continued support to manage and supply marine geo-spatial information to stakeholders within the national framework and working committees in support of Marine Spatial Planning Act of 2018 (Operation Phakisa Initiative 6 & 10), contributing to RSA maritime initiatives, including providing advice nationally (or to other government departments) on hydrographic survey/competency standards as well as coordinating hydrography on a national level, in order to unlock RSA's Blue Economy.

10. INNOVATION

- a. **Use of new technologies.** Nothing to report.
- b. **Risk assessment.** Nothing to report.
- c. **Policy matters.** Nothing to report.

11. OTHER ACTIVITIES

- a. **Participation in IHO meetings.** SANHO is fully committed to providing continued support and participation to IHO meetings and working groups. International travel remains a concern but all relevant meetings that are hosted/streamed virtually are attended by SANHO representatives.
- b. **Meteorological data collection.** Nothing to report.
- c. **Geospatial studies.** Nothing to report.

- d. **Preparation for responses to disasters.** The SANHO provides tidal and bathymetric information of Port Elizabeth, Durban, Simon’s Bay and Walvis Bay to the Indian Ocean Tsunami Warning Service. The SANHO also provides Coastal Navigation Warnings for adverse weather conditions for areas experiencing 35 knots and more gale force winds, and swell/sea heights of 4m and above, based on weather forecasts and requests from Cape Town Radio. NAVAREA VII warnings for adverse weather conditions, especially tropical storm warnings, are also issued by the SANHO. In 2020, South Africa submitted a draft Disaster Response Framework to the SAIHC secretariat for approval.
- e. **Environmental protection.** Environmental protection areas, marine reserves, etc. are indicated on SANHO charts and publications. South Africa is also a signatory to MARPOL conventions and are published as such in charts and publications.
- f. **Engagement with the Maritime Administration.** Nothing to report.
- g. **Aids to Navigation matters.** Nothing to report.
- h. **Magnetic and gravity surveys.** Nothing to report.
- i. **International engagements.** Nothing to report.

12. CONCLUSIONS

- a. **Areas of Significant Achievement.** Along with existing SANHO/SA Navy survey data, validated crowd-sourced bathymetry data that meets IHO survey standards are also being incorporated if and when available. These steps forward in crowd-sourced bathymetry shared by 3rd parties compliment the South Africa’s efforts in the GEBCO Seabed 2030 pilot project, and the SANHO will continue to provide feedback on local and regional initiatives in this regard as the SAIHC CSB Coordinator for SAIHC.

Teledyne CARIS chart production software has been installed at the SANHO and will be fully integrated with the new survey acquisition and processing software on board the new HSV and SMBs, realising the “ping to chart” philosophy and capability. This will also assist in the collection and formatting of geospatial data in aid of marine spatial planning in support of national Blue Economy initiatives. The acquisition of high-end large format inkjet printers to support the print-on-demand (POD) requirements of paper chart products was also being addressed as a priority through the Hydrographic Capability Replacement Project, enabling in-house printing of paper charts. The the SANHO has developed a Roadmap and Implementation Plan for the introduction of the S-100 family of services and standards.

In support of SAMSA’s initiative to provide aids to navigation for Inland Waters, the navigation aid for Swartvlei River Estuary has been completed and a new edition published in March 2023. New edition of SAN charts 1011 (INT 2673) and 1012 (INT 2672) was also produced in 2022, new edition of SAN 1021 in July 2023, along with a new edition of SA List of Lights and Radio Signals (SAN HO-1) in 2022. In terms of training, the achievement of the IHO/FIG CAT B certification from the UKHO for 7 junior cartographers, along with S100 training, provided great impetus into the SANHO Production Department, paper chart and ENC production.

- b. **Areas of Particular Concern**. Nothing to report
- c. **Any other matters of interest to the SAIHC**. Participation in Seabed 2030 and CSB activities in the region is highly encouraged and promoted, and SAIHC is invited to note the CSB report provided.