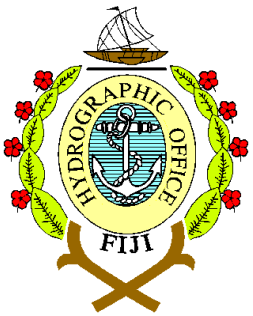

HYDROGRAPHERS ANNUAL REPORT 2020

LIEUTENANT COMMANDER G. D. ROKOUA

REPORT BY THE
HYDROGRAPHER, FIJI HYDROGRAPHIC SERVICE
LIEUTENANT COMMANDER G. D. ROKOUA, REPUBLIC OF FIJI NAVY
FOR THE YEAR 2020

This report describes the work of
The Fiji Hydrographic Service's Surveying Ships and of
The Fiji Hydrographic Office for the year 2020

Figure 1. Fiji Prime Minister Rear Admiral (retd) Voreqe Bainimarama, South Korean Ambassado to Fiji Ms Cho Shin-Hee, Captain Felix Maharaj and Hydropher LCDR Rokoua cutting the Golden Jubilee Cake

Introduction

1. The year 2020 was the Commemoration of fifty years of the FHS existence as a service provider for the Government of Fiji. In March 1970 prior to independence the Fiji Hydrographic Unit was established by the then colonial government as a section of the Marine Department after a 1966 study by the United Nations with respect to the transportation needs of the country and the region.

2. Despite this being the Golden Jubilee year, the FHS Survey Section was plagued with equipment problems brought about by many factors not the least being the Corvid – 19 pandemic. The Unit was not able to achieve its 280 survey days per year target as most of its MBES equipment had to have parts repaired, with the only repair companies being overseas. The Pandemic had made things all the more difficult but by November the MBES onboard the SMB Ika Vuka had its repairs completed and the Ika Vuka was able to complete the Dravuni disproving Survey which enabled the Unit to release its first digitally produced paper chart at the Golden Jubilee celebrations of which the Honourable Prime Minister of Fiji was the Chief Guest.

3. The Cartographic Unit though was more successful this year as the FHJS was able to release its first digitally produced navigation paper chart by the years' end. The Cartographic Section also released two new editions of paper charts the F7 – Nubulekaleka Bay and the F53 – Nanuku Passage to Lakeba Passage. The new chart is the F18 – Rovodrau Bay. This brings to 16 the total number of paper charts produced so far by the FHS which includes three INT charts – co produced by Australian and New Zealand HO.

4. The FHS also completed its five Year ODA project with the KHOA this year. Due to the Pandemic the planned ODA project activities for 2020 had to be cancelled. The cancellation resulted in the the FHS and KHOA through its contractor – MIT, discussing equipment donations to replace the planned activities. Discussions on the amount of equipment and related values are still under discussion at the writing of

this report. A separate report on the Joint ODA project will be forth coming on completion of the project proper.

5. The FHS also had discussions with the Aero-Asahi Group of Japan on a four-year joint project for the upgrading and production of Electronic Navigation Charts of Lautoka Port. This project has been put on hold due to the pandemic but the country stands to benefit immensely should this project receive the go ahead as it will chart a new way forward for the FHS and the country as a whole with respect to the opening of new marketing strategies with the FHS moving into ENC production.

6. Though the year was slow in terms of hydrographic surveying and nautical chart production the staff of the FHS benefitted from new educational and training opportunities. All FHS staff were able to acquire a Boat masters competency certificates from the Maritime Safety Authority of Fiji (MSAF). Two Hydrographic staff were also allowed to attend Undergraduate degree courses in Geospatial Information Systems at the University of the South Pacific.

7. Naval Training courses were also carried out at RFNS Togalevu Training Base of which FHS staff greatly benefitted from. These included The AB Promotion course and the LS Promotion Course. A Leading Survey Recorder Course was also conducted by RNZ Navy staff under the Defense Co-operation Program which was attended by eight Junior Ratings at the FHO.

Figure 2 The Hon Prime Minister checking F18 FHS first digitally produced paper chart.

Ship Report - RFNS Kacau

8. The Ship conducted no survey projects for the year 2020. This was mainly due to the defect incurred by the Ships main engine from July 2020. However this provided good time for the ship to train the surveyors and also conduct maintenance and repairs on the survey equipments.

9. The equipments that were sent overseas for repairs are as follows;

a. MBES SIU-I-NAV Box - Upgrade positioning system to receive WADGPS

b. Sound Velocity Probe - Recalibration and maintenance of sensors.

11. The survey team onboard looks forward to the upcoming year and most importantly hopes to conduct survey projects on completion of repairs.

Figure 3 RFNS Kacau surveying in Northern Kadavu Waters

Ship Report - RFNS Volasiga

12. RFNS Volasiga was donated by the government of the Republic of Korea in the end of 2019. The beginning of the year saw the ship undergoing sea trials and ship familiarisation prior to assisting in the carrying out of survey operations. After a successful period of testing of both equipment and personnel the ship and her crew were considered "seaworthy" and finally released for survey duties.

Figure 4 RFNS Volasiga surveying in Rovodrau Bay

13. The Ship was able to conduct three survey trips this year. The first was a joint project with the Mineral Resources Department carrying out a Marine Geological survey in the area near the Sigatoka River mouth. The ship carried out bottom sampling during the month long survey.

14. The ship was also deployed to Dravuni bay to assist the SMB Ika Vuka crew in the carrying out of the disproving survey of the Dravuni and Buliya island waters the completion of which allowed the release of the new edition of the F10 –Kadavu – Northern Portion paper chart (Digital Version).

15. A beacon and Navigational Aids check was also carried out the RFNS Volasiga in the Rovodrau Area in the vicinity of the Pacific Harbour Resorts area. This survey was the last check prior to the FHS releasing the F18 – Rovodrau Bay paper chart, Fiji's first digitally produced paper chart.

Ship Report – SMB Ika Vuka

16. Survey Motor Boat Ika Vuka, underwent a major upgrades and repair works later into the year. The upgrades included; side ladders; tinted windows and refitting of new air conditioning unit. However, there was still a persisting problem with the boat which was the ships generator to power the AC unit and the equipments at the same time. At the time of this report, Engineers are looking for suitable and capable generators to power both the AC and equipments.

17. Apart from this, the SMB was used for all surveys conducted in 2020 which was mianly in Suva conducting single beam surveys.

Figure 5 SMB Ika Vuka surveying in Kadavu Waters

Survey Equipment

18. **RFNS Kacau**

Name	Specification	Manufacturer
Multibeam Echo sounder	WBMS	Norbit Subsea
Towed Side Scan Sonar	Max Depth 200m; 500m@100kHz 150m@500kHz	Highlander Technology
Sub Bottom Profiler	Max Depth 200m; 2-8kHz; penetrating ability of 3 -50m	Highlander Technology
A Winch Frame	0-30m/min, 2Kw	Klein Marine Systems
Sound Velocity Profiler	Base X,	AML Oceanographic
Toughbook		Panasonic

19. **RFNS Volasiga**

Name	Specification	Manufacturer
Multibeam Echo sounder	EM2040C	Kongsberg Simrad
ADCP	Signature 500VM	Nortek AS
Side Scan Sonar	System 4900 Side Scan Sonar	Klein Marine Systems
Side Scan Sonar Winch	0-30m/min, 2Kw	OceanTech
Multi-purpose Winch	20m/min +/- 10%, 1.5 Kw	Sam BU
J-Frame	Manual Working Load: 0.2 Tons	Sam BU

20. **Hydrographic Office**

Name	Specification	Manufacturer
Multibeam Echo sounder	R2 Sonic 2020 R2 Sonic 2024 (under maintenance)	R2 Sonic, USA
Single beam Echosounder	Odom MK III	Teledyne, CANADA
GNSS Receivers	2 x R8s GNSS Receivers 1 x R8 GNSS Receiver 1 x Total Station	Trimble, USA
Tide Gauges	2 x Automatic Tide Gauges	ATIDE
Sound Velocity Profiler	1 x Minos X 1 x Base X	AML Oceanographic
Level	2 x Level	Lufkin
44-inch Plotter	A0+ Size plotting	HP
42-inch Scanner	A0 HD Pro	HP

CARTOGRAPHIC SECTION

Introduction

21. For historical reasons the primary charting authority (PCA) for Fiji was the United Kingdom Hydrographic Office (UKHO) which published charts of the Fiji waters based on charting surveys conducted by British and New Zealand naval ships in the 1800's and early 1960's. FHS produced its first ever Fiji chart in 1970.

In 1982 Fiji became a member of the International Hydrographic Organisation. This enabled FHS to produce twelve local navigational charts meeting IHO Standards and specifications, become producer nation to three International (INT) Charts and produce three special charts depicting the national Marine Spaces boundaries.

With the introduction of digital reproduction techniques, it is almost impossible to obtain traditional reproduction materials therefore FHS procured the CARIS digital chart production suite in 2015 to enable the conversion to digital cartography and chart compilation.

New Publication – Chart F18 - Rovodrau Bay

22. The publishing of Chart F18 Rovodrau Bay being jointly produced by Fiji and Korea Hydrographic and Oceanographic Agency in October 2020 was a milestone. The chart incorporated the bathymetric survey of Rovodrau Bay carried out in 2017. The publication of this new chart ensured that mariners have a more reliable and up-to date product to use in the vicinity of Rovodrau Bay which includes The Pearl Harbour Marina offering not only a safe haven for visiting yachts and super yachts, but also easy access to the abundance of water-based activities in and around the world-renowned Beqa Lagoon.

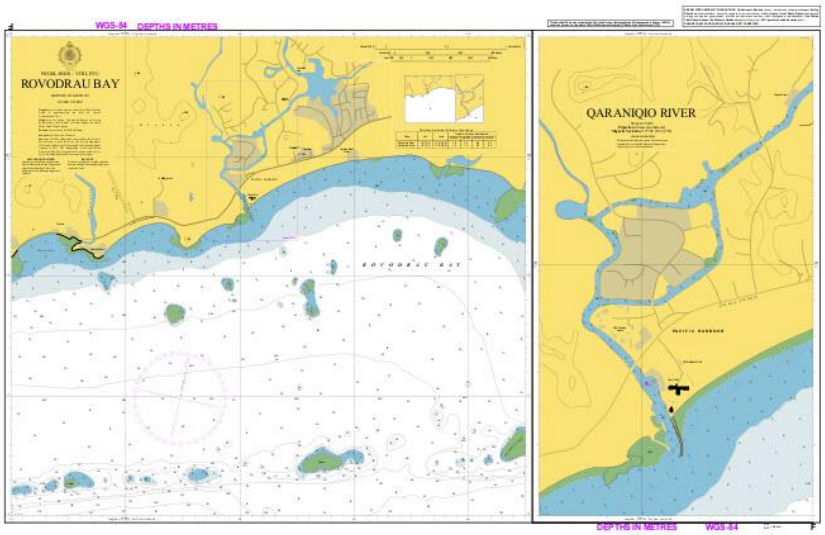

Figure 6 Chart F18

Existing Fiji Charts

23. FHS maintains a folio of the following National Series which complement the British Admiralty (BA) chart series. Hand chart correction updates to office working copies, archive copies and chart stock are done in-house from Fiji and Foreign Notices to Mariners.

Chart No.	Title
F5	Lautoka to Yasawa Islands
F6	Fiji Islands 200 Mile EEZ
F7	Nubulekaleka Bay
F9	Kadavu - Western Portion
F10	Kadavu - Northern Portion
F11	Plans in Kadavu
F18	Rovodrau Bay (Prod 2020)
F50	Natewa Bay - Southern Portion
F51	Somosomo Strait to Rabi Channel
F52	Natewa Bay - Nanuku Passage
F53	Nanuku Passage to Lakeba Passage
F54	Lakeba Passage to Kabara
F100	Plan in the Koro Sea

International Charts

24. Fiji is one of the printer nations of the following International Charts on scale 1:3,500,000 originally produced by New Zealand and Australia.

Chart No.	**Title**
F602 (INT602)	Tasman and Coral Sea- Australia to Northern NZ and Fiji
F604 (INT 604)	Coral and Solomon Seas and Adjacent Seas
F605 (INT 605)	New Zealand to Fiji and Samoa Islands

25. The Cartographic section as part of its chart update and maintenance plan has developed a strategy to transform its current chart folio to meet the latest editions of IHO Standards and Specifications. The ones most closely related to the conversion of raster to vector nautical chart production include the following:
S-4 Regulations for International (INT) Charts and Chart Specifications of the IHO
S-57 IHO Transfer Standard for Digital Hydrographic Data ("S-57 ENC product specification")

Publications

26. The Fiji Nautical Almanac for the year 2021 was published on Dec 20. The booklet contains tidal predictions, sunrise/set & moonrise/set times, astronomical phenomena, Maritime Safety Information and meteorological information for mariners to supplement charts for navigation in Fiji waters.

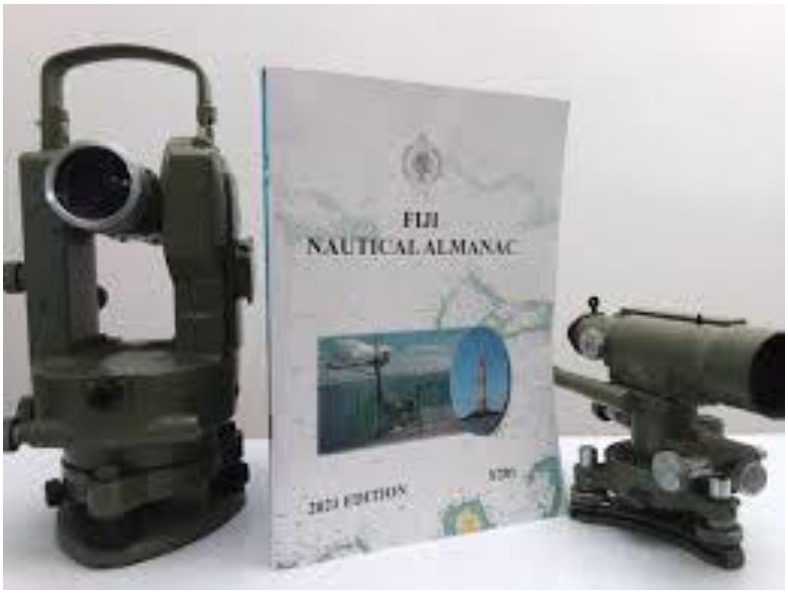

Figure 7 Fiji Nautical Almanac 2021

MARITIME SAFETY INFORMATION

Fiji Notices to Mariners (FNM)

27. The Hydrographic office is responsible for collating and distributing Fiji Notices Mariners to various maritime industries and chart retailers for updating National and International Charts. Notices are compiled from Admiralty, Australian and New Zealand Notices to Mariners and reportsof from local sources. FNM 1/20 was compiled and distributed in December.

Fiji Coastal Navigational Warnings (FCNW)

28. FCNW are issued by the Maritime Safety Authority of Fiji (MSAF) these reports are compiled and assessed by the cartographic section. Warnings which are assessed and seen to require permanent charting action are promulgated in the FNM or forwarded to UKHO for the promulgation in the Admiralty Notice to Mariners. A total of 44 coastal warnings were received as of 02 December 2020.A total of 23 was received as of 30July 2020.

NAVAREA XIV Warning for South-West Pacific

29. Maritime New Zealand continued the issue of long-range navigational warnings for our region. FHO receives these warnings through the Maritime Safety Information officer responsible in MSAF. These warnings are compiled, assessed and monitored. Those that require charting action is promulgated accordingly. A total of NAVAREA XIV was received as of 02December 2020. A total of 124 NAVAREA XIV was received as of 30July 2020.

SALE OF CHARTS AND PUBLICATIONS

30. The cartographic section continued with the sale and distribution of charts, publication and services to the general public.

CONCLUSION

29. The FHS is currently setting out the path for the next 5 years. This will involve the setting of the Database System which was originally planned to be set up under the FHS-KHOA ODA project but was overlooked in 2018. This would set the way towards the beginning of ENC chart production which would bring estimated earnings of approximately 2.4 million Fiji dollars paving the way towards self sustenance by the FHS.

30. The setting up of agreements with overseas Chart Agents and the installation and implementation of a Internet platform upon which overseas sales of local charts can be carried out through the internet "Print to Order System is also being planned.

31. The FHS is gradually gaining recognition in its contribution to the blue economy. The Fiji Islands being a maritime nation is heavily dependent on accurate charting for trade and tourism. Therefore, hydrographic surveying is one of the key essentials to the growth and development of our beloved nation. The FHS will continue to strive to meet its roles and responsibilities and the unit is looking forward to another great year ahead and will always persevere to meet the demands of a rapidly evolving maritime industry.