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THE SOLOMON ISLANDS HYDROGRAPHIC UNIT (SIHU)

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INTRODUCTION

This paper is aimed at creating an awareness of the development of the Solomon Islands Hydrographic Unit (SIHU) to the hydrographic community in general. It will briefly outline the geography and history of discovery of the Solomons leading to the formation of the SIHU which now produces four-colour charts to International Standards and carries out large scale surveys according to a five-year rolling plan.

GEOGRAPHY AND CLIMATE

The Solomon Islands (Fig. 1) comprises a scattered archipelago of mountainous islands and coral atolls stretching over 1 500 km in a generally south-easterly direction from Bougainville (Papua New Guinea) to the Santa Cruz Islands. The six main islands and island-clusters are arranged in a double chain, with Choiseul, Guadalcanal and Makira to the south. The archipelago covers a land and sea area of approximately 1.3 million km^2, (due to the declaration of a 200-mile Exclusive, Economic Zone in 1978) of which only 29,800 km^2 is land. To the west lies Papua New Guinea, to the south east is Vanuatu and to the south west some 1 600 km is Australia.

The main islands have thickly forested mountain ranges, deep valleys, rivers subject to flooding, coastal swamps and extensive coral reefs and lagoons. The only large coastal plain in the country is in the north-east of Guadalcanal. The small outlying islands are either typical coral atolls, such as Sikaiana and Ontong Java, or raised atolls, such as Rennel and Bellona, with limited vegetation. The Solomon Islands lie in the centre of an area of seismic activity, and there are several extinct or dormant volcanoes, with an active submarine volcano called Kavachi in the Western Province. Numerous hot springs and thermal areas are found in the Solomons.

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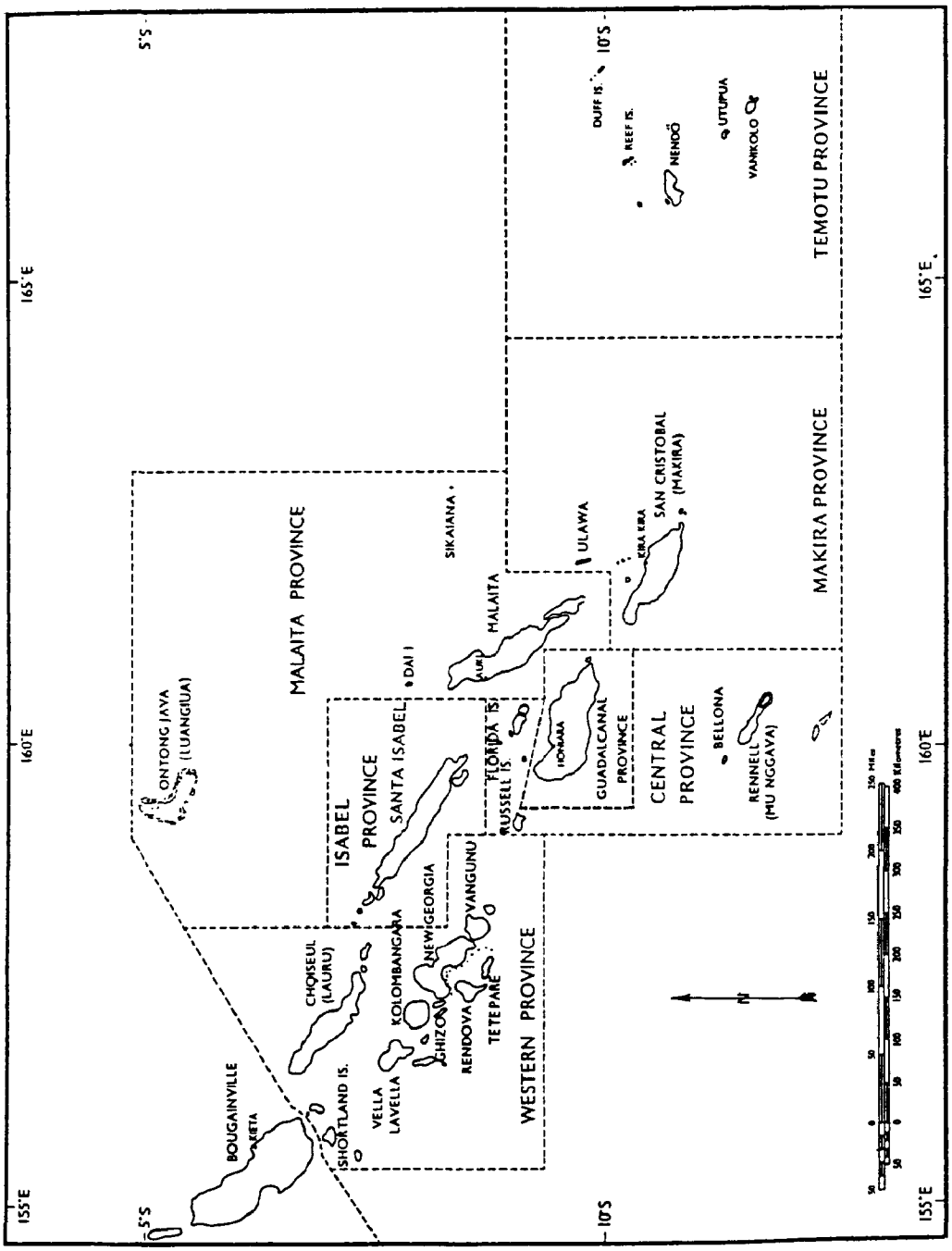

FIG. 1.— The Solomon Islands.

The Solomon Islands has a tropical climate with slight variations from island to island. There are two seasons termed 'wet' and 'dry' depending largely on the wind direction; however at times, it is difficult to tell the seasons apart. Generally the north-west trade winds blow from November to April ('wet' season) bringing tropical downpours, squalls, thunderstorms and occasionally cyclones.

For the remainder of the year (April-November), the south-east trade winds are in evidence with steady winds, some rain but generally fine days hence this period is known as the 'dry' season.

The average temperature is 30° C. with a high level of humidity. Evenings are cool, especially in the 'dry' season with temperatures dropping to around 20° C. at times.

The average rainfall is 3,500 mm per year but this is low compared to inland areas and on the windward side of islands where the annual rainfall often exceeds 7,500 mm.

THE FIRST 'HYDROGRAPHERS'

In 1567-68, Alvaro de Mendana in the CAPITANA accompanied by Pedro de Ortega in the ALMIRANTA headed westwards for various reasons across the Pacific on a journey of discovery leading them to the chain of islands which subsequently became known as the Islands of Solomon.

As a result of this voyage, charts and maps of the archipelago appeared in Europe within 20 years of the expedition's return to Peru.

In 1595, Mendana returned to the Solomons to colonise the islands but discovered Santa Cruz, where he perished after establishing an unsuccessful attempt at colonisation.

In 1606, Quirós, the Chief Pilot of Mendana's abortive 1595 voyage, returned and discovered Tikopea and Taumako. The expedition became divided in the New Hebrides (Vanuatu) and his second in command, Torres, headed west to discover the Torres Straits. In 1616, Schouten and Le Maire discovered Ontong Java and the north-east coast of New Ireland assuming it to be part of New Guinea.

The 17th and early 18th centuries saw the continued production of charts and maps of the Pacific depicting the Solomons with varying degrees of accuracy, some of which cast serious doubts on even the existence, let alone the location, of the Solomons.

It was not until 1767 that Carteret rediscovered the Santa Cruz Group encountering the islands of Vanikoro, Ndai and Malaita. One year later Bougainville discovered Ranongga, Vella Lavella, the western end of Choiseul and the island of Bougainville. He was followed in 1769 by Surville who sailed along the northern and eastern perimeters of the Archipelago.

In 1788, La Pérouse on his way to the main archipelago of the Solomons in the BOUSSOLE and the ASTROLABE came to grief on the reef surrounding Vanikoro and it was here that the crew perished. In the same year Shortland

returning to England from Port Jackson sailed through the southern Solomons. He was followed in 1790 by Ball, Hunter and Edwards all discovering or re-discovering various parts of the Solomons.

During 1792-93 D'Entrecasteaux made two visits to the Solomons; Manning explored the passage between Guadalcanal and New Georgia and Boyd discovered Rennel and Bellona. Wilkinson in 1794 explored the passage between Malaita and Ysabel.

The whole of the Solomons was said to have been discovered with the sighting of Nukumanu in 1824 by Wellings and when D'Urville finished his charting and exploration in 1838, enough data was available to produce a chart which 'generally' covered the whole of the Solomon Islands.

1838-1980

From 1838 onwards, an increasing number of whalers, traders and black-birders (labour recruiters) visited the Solomon Islands providing steady streams of hydrographic information. These activities brought about an increased British presence which included in 1878 a survey of the Southern Islands by Lt. Richards in HMS RENARD. In 1882 Lt. Oldham in the LARK continued in the Southern and Central islands. In an effort to bring law and order to the Solomon Islands, Great Britain declared a protectorate over the Southern Solomons in 1893 and by 1900 the rest of the Solomons group was included in the protectorate. This development saw Cmdr. Balfour in the PENGUIN carry out extensive surveys in the New Georgia area between 1893 and 1895. HMS DART was also active in the Solomons until 1902 and under the command of Cmdr. Pascoe completed several surveys.

Germany initiated surveys of Bougainville Straight in 1910 and continued till 1915. At the same time Cmdr. Glennie in the SEALARK was surveying in the Central and Southern Solomons notably Sealark Channel off Guadalcanal.

During World War II there was an upsurge in hydrographic activity and during the period 1940-1950 surveys were conducted by the Japanese, Americans and Australians. The famous Battles of 'Savo' and 'Guadalcanal' were fought here and in 1943-44 the USS SUMNER, Oceanographer and Pathfinder, carried out a number of surveys around the Solomons. It was during the war years that Australia commenced its hydrographic association with the Solomon Islands. In 1941, Lt. Cmdr. Tancred surveyed Graciosa Bay and Ndeni island and he returned in 1951 in HMAS WARREGO to survey Gizo Harbour. Between these times Sub-Ltd. Beiers in HMAS KIAMA (1945), Cmdr. Sharpey-Schafer in SHEPPARTON (1945) and Lt. Cmdr. Bolton in 1948 carried out various surveys in the Islands.

HMS COOK under the command of Cmdr. Hatfield, at the request of the Solomon Islands and Fiji, came to the Pacific in 1957 and spent some six years surveying in the area. In 1965, HMS DAMPIER carried out inshore work and in 1972-1973 Capt. Haslam in command of HMS HYDRA was deployed to

survey the Northern portion of the Solomons. This included surveys of Bougainville Strait, Manning Strait and New Georgia Sound.

The BSIP Marine Department was active in carrying out large scale surveys as early as 1958 and from then untill 1978 under the direction of Captains Taylor, Fish and Evans completed many surveys of harbours, islands, passages and wharf sites.

HMS HYDRA was the last of the Royal Navy's surveying vessels to visit the Solomon Islands. Her departure in 1973 signalled the end of an era but more importantly, as time went by, the need for hydrographic surveying became apparent and this ultimately led to the formation of the Solomon Islands Hydrographic Unit (SIHU).

SOLOMON ISLAND HYDROGRAPHIC UNIT (1980-1990)

In 1980, the Australian Government under the Defence Co-operation Programme (DCP) agreed to provide a Hydrographic Adviser for a period of two years along with certain items of surveying equipment to establish a limited hydrographic capability in the Solomon Islands. The ultimate aim of the project was and still is to provide the assistance required to localise the operation as soon as practicable.

In November 1980, Chief Petty Officer Slade arrived from the Royal Australian Navy Hydrographic Service. He set to work with the 'Hydrographic and Navaids' section of the Marine Division and with DCP funding he brought with him the following items of equipment:

— Mini Ranger III System
— Ratheon DE719 Echo Sounder
— EDM (AGA Geodimeter)
— Theodolite and Level
— Tide Gauge (Two)
— 5m Aluminium Boast & 50 HP outboard
— EG&G Side Scan Sonar
— Sextants (3)
— Codan SSB Radios (3)
— TI 59 Calculator

The Unit at that time consisted of the Adviser, one draughtsman who had completed a 2-year survey and drafting course with Lands and Surveys and 2-untrained 'surveyors'.

During the first two years, despite some difficulties, a number of surveys were completed and hydrographic training both in-country and abroad (Australia) was instigated. In November 1983, as a result of a Government decision to locate all surveying activities under the same administration, the Unit was transferred from the Marine Division to Lands and Surveys under the direction of the Surveyor General. This move provided better cartographic, lithographic and survey facilities but close ties are still retained with the Marine Division for obvious reasons.

Since the move the Unit has developed its own identity, carried out many large scale surveys and produced four-colour charts to IHO standards. These charts are printed in-country on a 'Duffa 5' flatbed proofing press installed some 20 years ago. A 'Hydroscheme' (five-year rolling plan of surveys) was developed in 1989 and the Solomon Islands Charting Scheme is nearing completion.

Recently the Surveyor General agreed to become a printing nation for the INT series of charts and also offered to compile and print INT 623.

All surveys and charts are sent to the RAN Hydrographic Service for appraisal and quality control.

A chart agency is also operated by the Unit selling British Admiralty, Australian and Solomon Islands' charts along with the necessary publications.

PERSONNEL

Since its humble beginnings with the Marine Division the Unit now is staffed with nine surveyors, five cartographic staff, one engineer plus the adviser (RAN CPO). The qualifications held are as follows:

1 X Bs Technology Surveying, RAN H4 (IHO Cat B), Maritime Boundary Delimitation Course.
(Mr. Patt R. Loe — Principal Hydrographic Surveyor)
1 X Certificate in surveying, RAN H4 (IHO Cat B), Mate Solomon Islands.
1 X Certificate in surveying, RAN Advanced Course Coxswain Certificate.
1 X Certificate in surveying, RAN Able Seaman Survey Recorder Course, Coxswain Certificate.
2 X RAN Able Seaman Survey Recorder Course, Deck Cadet Certificate.
1 X RAN Able Seaman Survey Recorder Course, Coxswain Certificate.
2 X Undergoing On Job Training.
1 X Engineer (for new vessel).
1 X Survey and Draughting and Survey Draughting Certificate On Job Training with UK and Australian Hydrographic Services, Bathymetric surveying Fiji (SOPAC).
4 X Survey draughting Certificate, On Job Training Australian Hydrographic Service.

TRAINING

Over the last 10 years training has been mostly carried out at the Royal Australian Navy Hydrographic School at HMAS PENGUIN and the Hydrographic Office, both located in Sydney, NSW. Mr. Patt Loe the OIC of the Unit has also completed the Maritime Boundary Delimitations Course in Canada and some On Job Training with the Fiji Hydrographic Service while Mr. Paul Teferomu has undergone cartographic training in the UK with the Royal Navy at

Taunton and completed a Bathymetric Surveying course in Fiji under SOPAC.

Nautical training is carried out at the Solomon Islands Marine School located at Ranadi in Honiara. The Marine School is a faculty of the Solomon Islands College of Higher Education (SICHE) and provides adequate training for the Unit's needs.

VESSEL AND EQUIPMENT

Having recognised the limitations imposed on the Unit with only one 5-metre open boat, Australia, under DCP, has agreed to provide a fully equipped 52 foot motor sailer. This vessel has been selected with due regard for economy (sail to survey area), handling, accommodation and storage facilities. It will provide the Unit with a suitable survey platform that can be deployed at will and with the included survey equipment package will increase the Unit's capability immensely. Details are as follows:

length	52ft.
beam	15ft.
draft	5ft.
engine	120 HP Perkins diesel
berths	8
construction	steel
rig	ketch

Equipment supplied includes:

Trisponder Positioning System
Elac Echo Sounder
Radar
Satnav
Auto pilot

The vessel was due for delivery in September 1990 and included in the package is sail training, two-year vessel and five-year equipment maintenance.

Other items of equipment which either have been or soon will be provided are as follows:

1 HP Vectra Computer, Printer and programmes
3 Wesdata Tide Gauges
3 VHF handheld marine radios
1 Photocopier
2 Light Tables
1 Vertiplan
2 Plan Cabinets

FUNDING

The day to day operation of the Unit is funded by the SIG but the acquisition/purchase of major items of equipment and their subsequent repairs has montly been provided by the Australian Government under DCP. Assistance in this form will be required for some time yet if the Unit is to continue with its steady progress and hopefully its future application to join the IHO.

MV CAPE PILLAR

During this period of growth for the SIHU several surveys were conducted by the MV CAPE PILLAR in Solomon Islands waters. These surveys were funded by Australian International Development Assistance Bureau with the survey team being provided by the RAN Hydrographic Service. The first in 1982 by Lt. Cmdr. Varley, RAN, who surveyed Indespensible Strait, South coast of Guadalcanal and San Cristobal and East coast of Malaita and Ulawa island. He was followed by Lt. Cmdr Brice, RN, in 1987 who commenced a bathymetric survey of the eastern Solomons and in 1989 Cmdr. Bond, RAN, and Lt. Errington, RAN, returned and continued with this survey.

CONCLUSION

1990 is the coming of age for the SIHU where the efforts put in over the past 10 years come to fruition with not only the arrival of the new hydrographic vessel but the knowledge that the skills required to successfully man it and process the resulting data have been learned well by the Solomon Islanders who form the Solomon Islands Hydrographic Unit.

Acknowledgements

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