

« STARTING UP A SMALL HYDROGRAPHIC SERVICE » THE STORY OF THE NEW ZEALAND SURVEYING SERVICE

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This evening I would like to give a short talk on the setting up of a Hydrographic Service in a small country — New Zealand — and the problems which were met and overcome. I was fortunate enough to be in charge of Hydrographic Surveying there from 1952 to 1954.

Up to 1939 all Hydrographic Surveying in New Zealand waters had been undertaken by the Royal Navy with the exception of harbour surveys carried out by local authorities. The main coastal surveys had been done by H.M. Surveying Ships *Acheron* and *Pandora* in the middle of the nineteenth century and by H.M. Surveying Ship *Penguin* at the beginning of the present century. It may be of interest to know that the late Admiral Nares, for 25 years a Director of this Bureau, served in *Penguin* during her New Zealand surveys.

In the mid thirties the Hydrographer of the Navy agreed, at the request of the New Zealand authorities, to undertake the complete re-charting of New Zealand waters and accordingly a Surveying Ship, H.M.S. *Endeavour*, was sent out early in 1937 under the command of Captain (later Rear Admiral) Wyatt. Surveys were commenced on the North-east coast of the North Island but the outbreak of the second World War brought surveying operations to a halt and *Endeavour* was recalled.

At the end of the war the Hydrographer was again approached for assistance but owing to the immense backlog of work which had accrued elsewhere during the war years was unable to accede to the request. It was, however, suggested to the New Zealand authorities that since they had started their own Navy during 1941 they might set up their own Hydrographic Service with assistance from the United Kingdom and Australia and produce charts of their own coasts.

No suitable vessel was available in New Zealand nor were there any trained personnel. It was therefore decided to borrow a Surveying Ship from Australia meanwhile ordering a new one to be built in the United Kingdom.

Accordingly H.M.A.S. *Lachlan* was loaned from the Royal Australian Navy at a nominal hire charge and surveying instruments bought or loaned from United Kingdom and Australian sources. The Royal Navy lent two Surveying Officers, one of whom took charge of the survey, whilst three Surveying Officers were lent by the Royal Australian Navy. The British Officers were replaced about every 2 1/2 to 3 years but the Australians only served for an initial period of about 18 months. At the same time two New Zealand Naval Officers volunteered for Surveying.

In addition an ex-Chief Petty Officer, Surveying Recorder 1st Class, joined the Royal New Zealand Navy and together with several other Surveying

Recorders loaned from the U.K. and Australia formed the specialist nucleus of the ship's company.

The position towards the end of 1949 was that New Zealand had acquired a Surveying Ship of some 1450 tons manned by 5 trained and 2 untrained Surveying Officers and half a dozen trained Surveying Recorders. It speaks much for the enthusiasm and resource of the Commanding Officer, Commander J. M. Sharpey-Schafer, R.N., that within a fortnight of the arrival of *Lachlan* from Australia he was able to sail to commence surveys in Foveaux Strait. Modifications which normally would have taken many months of work in a dockyard were actually carried out at sea during surveying operations by the ship's staff.

Shortly after *Lachlan* commenced operating, two 72-foot ex-Harbour Defence Motor Launches were commissioned as Surveying Tenders. These two were later to be named *Takapu* and *Tarapunga*.

A scheme for charting the entire coast of New Zealand had previously been worked out for H.M.S. *Endeavour*. This was slightly modified by a Hydrographic Committee consisting of the Naval Authorities, Marine Department, Lands and Survey Department and the Chamber of Shipping. The new scheme consisted of 27 coastal charts on a scale of 1:200,000 together with about the same number of harbour charts. The Hydrographic Committee continued to meet about once a year to decide priorities of the various areas to be surveyed. In order to give the Ship's Company a change from the often arduous weather conditions of the New Zealand coasts it was arranged that *Lachlan* should undertake small surveys in the Pacific Islands during six weeks of the winter, firstly in Fiji and later in Samoa, Tonga and other areas in the New Zealand Naval Station.

Very rapid progress was made, particularly in the early days, and by the end of 1956 surveys for some 7 coastal charts and 11 harbour charts in New Zealand and a coastal chart in Samoa had been completed. In addition a survey was carried out in Fiji for the British Hydrographic Department and numerous small surveys were carried out for Harbour and Marine authorities. This progress could never have been possible without the whole-hearted co-operation of the Lands and Survey Department under the very able guidance of the Surveyor General, Mr Russell Dick, who did all in their power to help the hydrographic work.

Not only did the Lands and Survey Department assist in the office but a tremendous amount of work was done by them in the field. They undertook to mark all triangulation stations visible from seaward and erect any additional marks required and also supply *Lachlan* with all their rectangular co-ordinates and geographical positions together with aerial photographs of the coastal regions wherever these were available.

As a result of this arrangement it was possible to prepare all plotting sheets, sounding boards, etc., before reaching the survey area and to begin sounding immediately on arrival.

This method of land surveyors carrying out the triangulation and marking ashore whilst the hydrographic surveyors concentrated on sounding worked extremely well and is strongly recommended when starting up a new Hydrographic Service. It was particularly valuable in New Zealand where the country is often very rugged and the Navy possessed few facilities for transport, camping and the

logistics supporting a survey party ashore on a mostly rockbound and inaccessible coast.

A similar arrangement whereby the Lands and Survey Department undertook all shore marking and triangulation was also made in Fiji and Samoa and again saved an immense amount of time since all necessary data was plotted on the passage to the Islands.

The only disadvantage was, of course, that the newly-made hydrographic surveyors got little or no opportunity to learn one very important aspect of their profession. This disadvantage was outweighed in the early stages by the necessity of producing the initial charts as quickly as possible.

Arrangements were later made for each of the young New Zealand hydrographic surveyors to undergo an exchange appointment either in a British or Australian Survey Ship lasting two years. In this way they were able to learn much of the land side of their profession since British and Australian Surveying Ships work mainly in areas where they have to carry out their own triangulation, topography and coastline. Further arrangements have now been made for New Zealand hydrographic surveyors to be attached for a short period to one of the Lands and Survey teams in the field.

By the end of 1951 two further hydrographic surveying officers were recruited into the R.N.Z.N. both of whom had previously had several years' hydrographic surveying experience in the Royal Navy. In 1953 a third New Zealand officer volunteered for surveying and a fourth in 1956. Another ex-Royal Navy surveying officer joined in 1955.

By 1956 therefore the Royal New Zealand Navy possessed some 7 hydrographic surveying officers, 5 of whom had 7 or more years' experience, and an equivalent number of trained Surveying Recorders. It was decided therefore that one of the two Royal Navy officers on loan would no longer be required and that by 1960, some 10 years after its inception, the Hydrographic Branch of the Royal New Zealand Navy would be completely self-supporting.

It has never been possible to complement *Lachlan* and the two Surveying Tenders completely with surveying officers, as is the normal custom in Commonwealth Navies, and a certain dilution with General Service officers has always been necessary. This is not considered a disadvantage since it gives the General Service officer an opportunity to see and understand the workings of a part of the Navy with which he is normally quite unfamiliar. All the General Service officers, most of whom were Navigators, who served aboard *Lachlan*, proved most useful and admitted to enjoying their period of attachment.

So far I have only dealt with the problems at sea and in the field and of providing trained hydrographic surveying personnel. Another equally important problem, although one that can naturally be tackled slightly later, is that of the production, distribution and issue of the resulting charts.

At the outset in 1949 no facilities existed in Navy Office for the drawing of charts. There was no drawing office staff capable of undertaking the work, nor in fact a drawing office. The Lands and Survey Department generously agreed to place their facilities at the disposal of the Commanding Officer, H.M.N.Z.S. *Lachlan*, who also acted in the dual capacity of Staff Officer (Hydrographic) to the New Zealand Naval Board.

A Hydrographic Section of the Lands and Survey Department was therefore set up and the first charts drawn by Lands and Survey draughtsmen from compilation tracings prepared on board *Lachlan* by ship's officers. Naturally the Commanding Officer had to exercise a very strict supervision over draughtsmen to whom the symbols and layout of a chart were quite unfamiliar. Since the Commanding Officer was also in charge of surveying operations in the field he was kept very busy. Fortunately, early in 1950, two experienced hydrographic draughtsmen resigned from the British Hydrographic Department and emigrated to New Zealand. Their arrival greatly eased the problem of chart drawing. Both men spent several months at sea in *Lachlan* to gain an insight into the conditions of work in the field.

The production of charts remained a joint effort between the officers of *Lachlan* and the Hydrographic Section of the Lands and Survey Department until August 1953 when drawing office accommodation having been found in Navy Office, both draughtsmen were transferred from the Lands and Survey Department and the Navy became solely responsible for the production of charts. The printing however continued to be done by the Government Printer, Wellington.

The issue of charts to the public was at first undertaken by the Marine Department who already acted as British Admiralty Chart Agents in New Zealand. Shortly after the introduction of the first New Zealand charts a Women's Royal New Zealand Naval Service draughtswoman was lent to them to keep the bulk stocks of the New Zealand charts corrected up to date.

Another W.R.N.Z.N.S. draughtswoman was added to the Hydrographic Branch to assist in drawing the smaller and simpler charts, one or two of these also being drawn by the senior Surveying Recorder, Chief Petty Officer Long. When more draughtsmen were recruited to the Branch the W.R.N.Z.N.S. draughtswoman was released.

It may be of interest to note that the original rate of production of charts fell off rapidly after the first three years. 4 charts were published each year in 1951, 1952 and 1953 but only 2 in 1954 and 1955 and 3 in 1956 despite the number of draughtsmen available in 1956 being double that of the first years and surveys always being ahead of chart production. One of the main reasons for this is that as soon as a chart is published its plate must be kept corrected up to date. The more charts that are published the greater the proportion of draughtsman's time is employed on correction work rather than the drawing of new charts. Another reason was that the paper work and records held in the Hydrographic Branch increased out of all proportion to the increase in staff.

In 1956 Chief Petty Officer Long reached the naval retiring age, after nearly 30 years continuous surveying service in the R.N. and R.N.Z.N., and was enrolled in the branch as a draughtsman. Although he still helped to draw some of the smaller charts his main duties were to take charge of all records and also be responsible for the drafting of all Notices to Mariners correcting New Zealand Charts. Previously the Marine Department had been the authority for the issue of all New Zealand Notices to Mariners but it was now felt that the Department responsible for the production of charts should also be responsible for the Notices to Mariners correcting them.

There are as yet insufficient surveying officers available to keep one permanently ashore in the Hydrographic Branch and Radio Navigational warnings

(W.M. Messages) are issued by the Operations Division of the Naval Staff. It is hoped that the Hydrographic Branch will eventually take over the issue of these warnings.

A naval chart depot already existed in Auckland at the Naval Base for the issue of all charts and publications, both British and New Zealand, to the Royal New Zealand Navy, but in 1956 the bulk stocks of New Zealand charts were transferred from the Marine Department, Wellington, to this depot, which now became responsible for the correction of all New Zealand charts and their issue to both naval and commercial users. The Auckland Chart Depot, which came under the direction of the Hydrographic Branch, was manned by a civilian chart depot superintendent with civilian and W.R.N.Z.N.S. chart correctors.

The present composition of the Surveying Service of the Royal New Zealand Navy is the Surveying Ship H.M.N.Z.S. *Lachlan* and the two Surveying Tenders *Takapu* and *Tarapunga*. (The building of a new surveying ship in U.K. has been deferred indefinitely owing to reasons of economy.)

Surveying personnel at sea consists of :

- 1 Commander (H) as C.O. *Lachlan* and S.O. (H), on loan from R.N.
- 4 Lieutenant-Commanders (H) and 3 Lieutenants (H) R.N.Z.N. Some dozen Surveying Recorders.

Personnel in Hydrographic Branch, Navy Office, Wellington :

- 1 Senior Draughtsman in charge.
- 4 Draughtsmen.

Personnel in Auckland Chart Depot :

- 1 Chart Depot Superintendent.

Several civilian and W.R.N.Z.N.S. Chart Correctors.

It is obvious that with these small numbers it is not possible to carry out all the work undertaken by the large Hydrographic Offices elsewhere and such tasks as the publication of Tide Tables, Light Lists, Sailing Directions, etc., are not attempted, data and information on these subjects being forwarded to the British Hydrographic Department for inclusion in its publications.

The main work of the Hydrographic Branch is concerned with the charting of the coasts of New Zealand and her Dependencies. Modern charts are now in existence covering almost the whole of the North and East coasts of the North Island and much of the South and East coasts of the South Island. Most of the main ports have been surveyed and the remainder will be completed shortly. The main programme of coastal charts and those in the Dependencies will last all the foreseeable future.

One aspect of the work on which I have not yet touched is that of Oceanography. The New Zealand hydrographic surveyor has always worked in close conjunction with the Oceanographer, the Commanding Officer of *Lachlan* sitting on the committee of the Oceanographic Institute of the Directorate of Scientific and Industrial Research. Until 1954 a scientist served permanently aboard *Lachlan*, being responsible for all bathymetric and oceanographical observations. Recently the Directorate of Scientific and Industrial Research have obtained the part-time use of a small naval vessel, H.M.N.Z.S. *Kiwi*, and the main oceanographical work is now undertaken from her although *Lachlan* still carries

out this type of work on passage to Fiji, etc., and will also assist during the International Geophysical Year.

New Zealand has been a State Member of the International Hydrographic Bureau since 1947, but like Great Britain and Australia is represented under one entity, the British Commonwealth.

In conclusion I would like to say how proud I am to have been able to assist, in however small a degree, in the setting up of the Hydrographic Branch of the Royal New Zealand Navy. New Zealand was certainly fortunate in having a flourishing Lands and Survey Department and also in the assistance given by the Royal Navy and the Royal Australian Navy. I feel however that even without outside help she would have still achieved an efficient Hydrographic Service in the near future. This she would have done because of the tremendous enthusiasm of the marine and surveying sections of the community and their realization of the necessity of up-to-date surveys for a maritime country. Any nation wishing to set up a Hydrographic Office would do well to copy her example.

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