AD-A135 600 REPORT OF THE HYDROGRAPHIC SERVICE ROYAL AUSTRALIAN NAVY FOR THE YEAR ENDED 30TH JUNE 1983 ISSUE NUMBER 19 (U) ROYAL AUSTRALIAN NAVY HYDROGRAPHIC SERVICE CANBERRA 1/1

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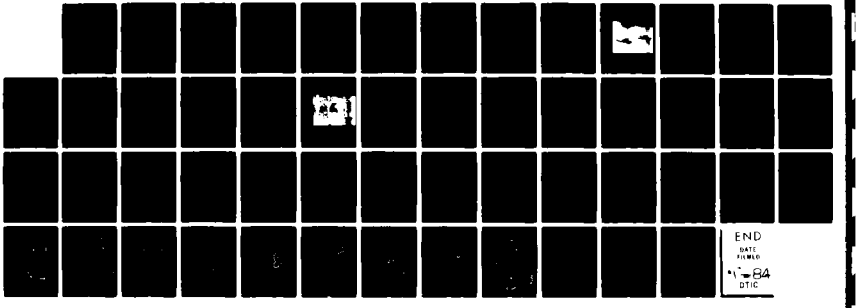

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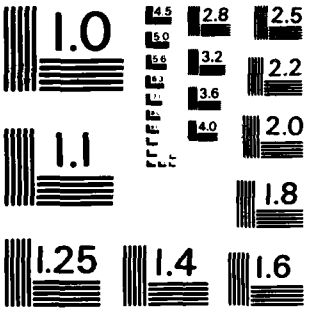


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

1982-83

DEPARTMENT OF DEFENCE (NAVY OFFICE)

REPORT

of the

HYDROGRAPHIC SERVICE

ROYAL AUSTRALIAN NAVY

for the year ended 30th June 1983

Issue number 19

CONTENTS

A-1

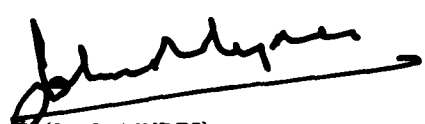
HYDROGRAPHIC SERVICE, R.A.N.

ANNUAL REPORT – 1982-83

1. INTRODUCTION

This Report describes briefly the work of the Hydrographic Service of the Royal Australian Navy.

The period covered by the report, 1 July 1982 to 30 June 1983, is selected to provide an up-to-date account for the annual meeting of the National Mapping Council. Statistics relating to production, sales and issues are for the same period.



(J.A.L. MYRES)
Captain, Royal Navy
HYDROGRAPHER R.A.N.

2. GENERAL

The RAN Hydrographic Service is the branch of the Royal Australian Navy which is responsible for surveying Australian waters and for producing the Australian Series of navigational charts and supporting publications. This responsibility was vested in the Royal Australian Navy by a Cabinet Decision of 1946, and subsequently confirmed by a Decision of 1981.

Besides the national hydrographic responsibility outlined above, the RAN Hydrographic Service provides hydrographic, oceanographic and meteorological support for the RAN and the other armed services.

The RAN Hydrographic Service forms part of the Deputy Chief of Naval Staff's Division. The Head of the Service is the Hydrographer RAN, who maintains an office and supporting staff within Navy Office in Canberra. The Hydrographer exercises professional control over the ships which form the RAN Marine Science Force, those sections of commissioned HMA Establishments involved in hydrography, oceanography and meteorology, and the Hydrographic Office located in North Sydney.

Data processed by the Hydrographic Office come from a wide variety of sources besides the ships of the Marine Science Force. Commonwealth and State authorities, private companies and individuals, together with international organisations all provide information freely for the improvement of knowledge of the environment in which the mariner operates.

The processed data are distributed by the Hydrographic Office. The principal products are charts which are issued to the Fleet and are available for sale to other users. These charts are maintained by Notice to Mariners and by a regular programme of reprints. A network of authorised chart agents is maintained throughout the country and overseas.

Progress continues to be made in the updating of data storage and processing facilities within the Hydrographic Office.

3. HYDROGRAPHIC SURVEYING

A. SHIP REPORTS

H.M.A.S. MORESBY

Commander P.A. Hardy, R.A.N.

MORESBY completed her refit in late September, during which a small survey in Cockburn Sound was undertaken. MORESBY has since carried out surveys on the South West and West coasts and, in June 1983, was engaged in surveys in the Cocos/Keeling group. The ship was diverted to observe a Soviet space vehicle splash-down, in February 1983, in the Indian Ocean.

Dongara to Cape Leschenault

On completion of sea trials, MORESBY undertook a second season's work in the Dongara area. Boats were landed at Jurien Bay and steady progress was made despite generally rough weather conditions. Insufficient time was available to complete the survey before the Christmas Leave period and it was progressed to completion during the latter half of May 1983.

Sounding was controlled by ARGO DM54 with additional control provided by Mini Ranger 3. ARGO stations were established at Escape Island, Ledge Point and Rottnest Island. The chain provided good stable coverage in the working area.

Approaches to Esperance

MORESBY departed her base port, H.M.A.S. STIRLING, in January to undertake a second season's work in the Recherche Archipelago. The area lay to the eastwards of MORESBY's 1981 survey. The ship suffered considerable problems in establishing her ARGO stations on this barren and inhospitable coast. Continuing difficulties with the chain made for slow progress, however the need for the survey was clearly shown with the discovery of a 21 metre shoal rising from an otherwise flat sea bed in depths of 80 metres which had the dimensions of an industrial chimney stack. The survey was terminated abruptly when the ship was diverted to the Indian Ocean to observe the Soviet space event. Considerable work remains in this area and it will be progressed during the summer in the next 2-3 years.

Lancelin Range

Following the grounding of U.S.S. VANCOUVER off the Lancelin Bombardment Range, MORESBY was additionally tasked in mid-May to survey a strip of coastal waters to seaward of the range and within the bounds of the Dongara to Cape Leschenault survey. Considerable differences were found when compared with the inadequate detail currently shown on the published chart and these will be reflected in an urgent new edition of AUS 105 now in the course of publication.

Cocos/Keeling and Christmas Islands

MORESBY sailed at the end of May 1983 to undertake a deployment to the Indian Ocean, primarily to undertake a lagoon survey of South Keeling. The ship visited Djakarta during the period and, in addition to the main task, progressed surveys in the vicinity of the Cocos/Keelings. The opportunity was taken to undertake some sounding off Christmas Island prior to the ship's return to H.M.A.S. STIRLING in July.

H.M.A.S. FLINDERS

Lieutenant Commander M.A. Bolger, R.A.N.

During the period the ship has spent two short seasons working in the Gulf of Carpentaria, a further season in Hydrographer's Passage, and has surveyed in the Trinity Opening area and off Port Clinton. The ship commenced a planned refit in early June 1983.

Gulf of Carpentaria

As reported last year the ship made excellent progress between Pennefather River and Vrilya Point and returned to her base port, Cairns, in late July 1982. The ship returned after the Easter 1983 leave period, and completed the area before the start of her current refit.

Trinity Opening

Following considerable problems with main machinery after the August maintenance period, FLINDERS' programme was amended and she undertook surveys in the vicinity of Trinity Opening using her survey motor boat. Good progress by the boat was made in the area, which is part of the Cairns North Area of Hydroscheme 80, before the ship became operational on 21 October. The survey was terminated in mid-November prior to the Christmas leave period. The results are reflected in the new edition of AUS 832, recently published.

Hydrographer's Passage

Following discussions with the Department of Transport it was decided that further work was required in the area of the seaward ribbon of reefs to conclusively establish the least depths. Accordingly, FLINDERS sailed in January to conduct detailed examinations of the critical areas, and to prove the chosen route with side-scan sonar. Good agreement was found with the previous season's work, and the ship assisted the Dept. of Transport's vessel M.V. CAPE MORETON in placing markers for the proposed navigational aids which must be constructed before the passage can be opened for the general use of shipping.

Broad Sound Channel/Port Clinton

In the short period remaining before Easter 1983, FLINDERS started work in the sand-wave area in Broad Sound Channel, whilst supporting a boat party working in the south arm of Port Clinton. Further work will be required in the Broad Sound Channel area, but the boat party completed the planned task to Seahound Hard.

M.V. CAPE PILLAR

Lieutenant Commander M.W. Varley, RANEM

A small contingent of naval surveyors was embarked in the Dept. of Transport's vessel CAPE PILLAR (Masters: Captain G.L. Maxwell and Captain P. Robinson) from July to October 1982.

The task, under the Defence Co-operation Programme, was to conduct surveys in the Indispensable Strait area in the Solomon Islands.

ARGO DM54 equipment was deployed and worked well despite the unseasonally high levels of intense electrical storms and torrential rainfall.

Some hundred days of sounding were achieved and the results have been passed to the Solomon Islands Government, and to the United Kingdom Hydrographic Office. The latter will incorporate the work in its planned series of new charts for the area.

SOLOMON ISLANDS HYDROGRAPHIC UNIT

Loan Personnel:	CPOSR K.D. Slade	01-7-82 to 17-1-83
	CPOSR P.J. Walker	17-1-83 to 30-6-83

The continuance of the loan of a senior sailor to the Solomon Islands Government to assist in the development of the national Hydrographic Unit is another feature of the D.C.P. programme. Since January his role has changed from 'in charge' to 'adviser' as the unit grows in strength and experience. The Officer-in-Charge is now a Solomon Islander who has been trained in Australia at the R.A.N. Hydrographic School.

Three surveys have been undertaken during the period.

Indispensable Strait

In conjunction with the CAPE PILLAR team, assistance was given in establishing ground control for the ARGO sites at the start of the survey.

Marau Sound

A survey on a scale of 1:25,000 has been completed in Marau Sound at the south-east corner of Guadal canal. This survey has been beset with problems which have been a good test of the diligence of the unit to see the task through to completion in May 1983.

Honiara

Work commenced in June 1983 on a survey adjacent to Honiara on a scale of 1:5,000 with control by Mini-Ranger 3.

B. PLANS FOR 1983-84

H.M.A.S. MORESBY – will provide support for a WRELADS trial offshore from Garden Island during the A.M.P. in August/September (extended to allow for engine repairs). The aim is to test WRELADS in West Australia waters, and to conduct rigorous check trials with simultaneous surveys by boats and aircraft. On completion the ship will deploy for a short season in the Joseph Bonaparte Gulf with the aim of "tidying up" the large amount of boat work before the next full season in 1984. Ship-running will be reduced to make fuel savings in line with Fleet policy. A full season is planned from January to April 1984 to continue work in the Esperance area. It is intended that the ship will continue surveys eastward to the longitude of Cape Pasley.

A refit will take place from April to August 1984.

H.M.A.S. FLINDERS – is due to complete her refit in October. The ship will remain alongside until after Christmas to allow an opportunity to complete long overdue ship husbandry tasks. A local boat survey will be undertaken. In the New Year, the ship will return to the area of Hydrographer's Passage, and prove the route, using side-scan sonar, between Penrith Island and Hay Point. This work is necessary to complete the modern surveys, and provide modern charts, from Hay Point to the Coral Sea. In the second season of the year, the ship will return to the Gulf of Carpentaria to commence work off Pera Head, south of the port of Weipa.

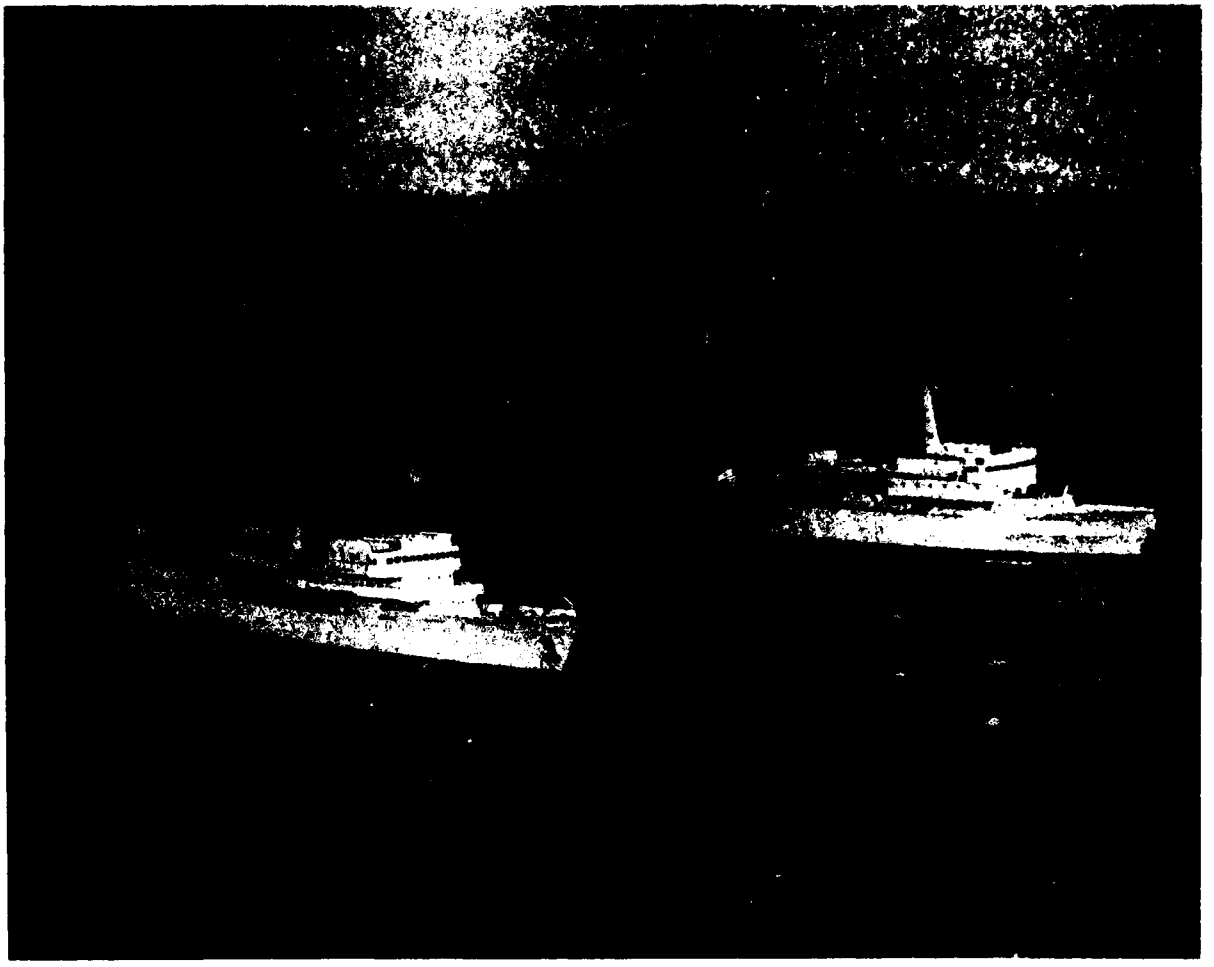
H.M.A.S. COOK –will be employed on one hydrographic survey during the year in exercise of her secondary role. Consideration is being given to the area east of Eden, NSW, which will provide a good work-up for the ship in this role, and fulfil a charting requirement for Fleet purposes.

Defence Co-operation Programme – Another period of surveying by CAPE PILLAR in the South West Pacific is under active consideration and, if approved, will take place in mid-1984.

C. HYDROSCHEME 85

Detailed discussions have taken place during 1982 and 1983 witha all interested maritime authorities to decide the programme of surveys to be undertaken during the period 1985-89 by the R.A.N. Hydrographic Service. Those carrying the highest priority will be embodied in the next 5-year plan (HYDROSCHEME 85) which will be published in mid-1984.

For the first time, this Hydroscheme will include an intended programme for the publication of charts resulting from the surveys being carried out, and in continuation of the modernisation of the Australian chart series.



HMA Ships MORESBY and COOK in company off the Western Australian coast during May 1983.

4. OCEANOGRAPHY

The Hydrographer is responsible for the development of the oceanographic policies, priorities and practices in the RAN. The principal components of the oceanographic work are conducted by elements of the Fleet, the Hydrographic Office and the Meteorological Office at the RAN Air Station, NOWRA.

The oceanographic work can be summarized in three areas:

A. Research Ships;

B. Australian Oceanographic Data Centre (AODC);

C. Fleet Oceanographic Support Services.

A. SHIP REPORTS

H.M.A.S. COOK

Commander P.J. Cooke-Russell, R.A.N.

H.M.A.S. COOK's main machinery problems kept her alongside in Sydney for the first eight months covered by this report. Setting-to-work and trials of her winches confined her to the Sydney area for a further two months. On 3 May, COOK finally sailed as an operational unit on an Oceanographic Cruise.

During the ship's period alongside, personnel and equipment assistance was given to H.M.A.S. KIMBLA and M.V. CAPE PILLAR for their oceanographic and hydrographic tasks. COOK's ARGO DM54 provided the navigational control for KIMBLA's RAN Research Laboratory (RANRL) Oceanographic and Marine Geoscience Cruise 8/82, in November 1982, off Southern New South Wales. Several of COOK's survey personnel were loaned to CAPE PILLAR to assist in the DCP' sponsored hydrographic survey of Indispensable Strait in the Solomon Islands from July to October 1982.

COOK sailed on 3 May to undertake a RANRL cruise off the north west coast of Australia. A stopover in Fremantle, Western Australia, in the period 16-23 May enabled participants of the Australia/ New Zealand Association for the Advancement of Science (ANZAAS) conference, being held in Perth to view COOK and her equipment at first hand. Of particular interest to the conference delegates was the Stabilised Narrow Beam Echo Sounder System (SNBESS) fitted in COOK, one of very few such equipments in the world.

COOK has since carried out research for RANRL off the north-west coast of Australia. The following studies were undertaken:

a. to examine the continental slope in order to make an acoustic classification of the seafloor;

b. to characterise the physiography of the lower continental slope;

c. to define the continent/ocean boundary;

d. to examine the source of the high salinity water found at the base of the mixed layer off the N.W. coast; and

e. to study the advective atmospheric duct found off the N.W. coast.

The ship has conducted passage sounding between working areas, investigating vigias enroute. A SNBESS transit was made of the Woodlark Basin for Bureau of Mineral Resources.

COOK will spend the remainder of the year in the Tasman Sea conducting RANRL cruises and will sail on the first of the SEAMAP cruises in January 1984.

H.M.A.S. KIMBLA

Lieutenant Commander S.J. Dutton RAN 1.7.82 – 9.6.83
Lieutenant Commander A.E. Vidler RAN 9.6.83 – 30.6.83

KIMBLA successfully completed a short refit on 30 August 1982. She then commenced a busy oceanographic programme which has taken her the entire length of the eastern sea-board and to the west of Bass Strait.

During the year KIMBLA carried out the following research voyages:

1982	
09 Sep – 17 Sep	Mangrove survey in N. Queensland for the Australian Institute of Marine Science (AIMS).
20 Sep – 22 Sep	Sound propogation measurement for RANRL.
23 Sep – 03 Oct	Sponge and algae survey on coral reefs in the Princess Charlotte Bay area for AIMS.
01 Nov – 09 Nov	Geoscience and acoustic survey on the continental slope of Southern New South Wales for RANRL.
11 Nov – 21 Nov	Mooring and cable laying in Jervis Bay.
26 Nov – 02 Dec	Study of the East Australian Current between Smokey Cape and Coffs Harbour for RANRL.
06 Dec – 08 Dec	*Sonar buoy trials for* RANRL.
1983	
21 Feb – 25 Feb	Survey, sample and photograph bottom of canyon east of Norah Head for RANRL.
07 Mar – 15 Mar	Collection and comparison of data on primary and secondary production in Central Bass Strait for Victorian Institute of Marine Sciences (VIMS).
17 Mar – 23 Mar	Study of water mass structure and collection of biological samples for VIMS in Western Bass Strait.
15 Apr – 06 May	Collection of bathymetric and hydrological data from Southern Tasman Sea for RANRL.
10 May – 17 May	Continuation survey of the submarine canyon east of Norah Head for RANRL.
23 May – 25 May	Sonar trials for RANRL.
27 May – 03 Jun	Investigation of western edge of the East Australian Current between Smokey Cape and Wooli Head for RANRL.

Although not purpose-designed for oceanographic work, KIMBLA continues to be a very hard-working and productive unit in the Marine Science Force. Although over 28 years old it is hoped that she will remain operational for a few more years yet.

B. AUSTRALIAN OCEANOGRAPHIC DATA CENTRE

Bathythermal Data

The Australian Oceanographic Data Centre (AODC) continued to operate the national bathythermal data bank, responding to enquiries from both Defence and civilian sources. Continued modifications to the data bank software have resulted in increased efficiency in data retrieval and analysis. An important aspect of 1982/83 was the provision of a copy of the entire bathythermal data file to the World Data Centre 'A' (Oceanography) in Washington, U.S.A.

Nansen Casts

The AODC has begun development of a data bank containing Nansen cast data. This data bank will contain temperature, salinity, oxygen and other chemical components of sea water together with various calculated values such as density and sound velocity. Nansen cast data is collected to greater depths than XBT data so will provide valuable information on aspects of oceanic water composition. Initially, the data bank will contain 50,000 Nansen stations and it is expected to be operational by the end of 1983. The data will be available to both Defence and civilian users.

Fleet XBTs

The Fleet maintained a satisfactory standard of XBT probe deployment, launching almost 5000 probes with a success rate of 70%. A slight reduction in overall success rate from 1981/82 can be attributed to a deterioration of XBT probes because of age. Appendix VII contains a table of data rendered by ships and units during the period.

Expansion of AODC

The expansion of the AODC has continued with an increase of staff during this reporting period. Two officers have been seconded from other areas in the Hydrographic Office, and the Public Service Board has created a new category of Science (Oceanography) to describe the position of Officer-in-Charge, AODC. The staff currently active in AODC are:– Science (Oceanography), Technical Officer, Drafting Officer, Computer Systems Officer and a Leading Seaman.

Work throughout this year has focused on stabilising the foundation of the previous 12 months' activities as well as development work towards the implementation of the in-house computer system HYDROCOMP. The HYDROCOMP tender specifications have been prepared with the assistance of a computer consultant and it is anticipated that a tender will be let towards the end of FY 1983/84.

IGOSS

The AODC's involvement with the Integrated Ocean Services System (IGOSS) continued with the receipt of international bathy messages via the Bureau of Meteorology. Other activities included the preparation of a report for the Australian delegate attending the 4th session of the IOC Program Group for the Southern Ocean (PG/SOC) in Paris (March 1983). The Western Tasman Sea Oceanographic Analysis chart prepared on a regular basis by the Meteorological Office at NAS Nowra is now being reproduced by AODC, and is issued as an Australian IGOSS product.

C. SUPPORT SERVICES

Sonar Range Prediction

The fluctuating demand for Australian Sonar Range Prediction (AUSRAP) information issued by the RAN Air Station, Nowra, reached a peak of 56 separate forecasts during November 1982 for Exercise SANDGROPER.

Access to AUSRAP data via the computer terminal situated in the Meteorological Office was previously a long, involved process, due mainly to the poor communications link between terminal and computer. The situation has been greatly improved be the introduction, in April 1983, of a telephone model which replaced the acoustic coupler.

Tasman Sea Analysis

Preparation of the weekly Western Tasman Oceanographic Analysis produced by RAN Air Station, Nowra, has at times been based on limited data. Provision of temperature/depth information by the RAAF was arranged on an ad hoc basis during 1981, but unfortunately observations received as a result of this arrangement became very infrequent during 1982/83.

In June 1983 Naval Air Squadron VC851 conducted two BATHY sorties and provided valuable information for the preparation of the oceanographic analysis. It is anticipated that during 1983/84 VC851 will conduct routine AXBT sorties twice a month to oceanic areas as detailed by the Meteorological Office.

Oceanographic Briefs

Briefs are produced in support of naval and air force exercises, deployments and training requirements. In 1982/83 these have included Exercises Kangaroo '83 off the north west coast, Sandgroper '82 off Perth, and Sea Eagle '83 in the Western Tasman Sea.

Education and Training

During the year the billet foreshadowed in the Australian Joint Anti-Submarine School of Officer-in-Charge Applied Oceanographic Centre has been created. The major effort of the incumbent in the first instance will be focused on education and training in oceanography and applied oceanography.

Oceanographic Support Manual

Writing of this publication to bring together basic military oceanographic topics, support products and regional oceanography, is almost complete.

5. METEOROLOGY

R.A.N. Air Station, NOWRA

General

The Meteorological Department at the RAN Air Station at Nowra is responsible for all RAN meteorological forecasts, surface and upper air observing, and meteorological training. Oceanographic functions are also performed.

Meteorological Forecasting

During the past decade the major role of the Meteorological Office, R.A.N. Air Station, Nowra, has shifted dramatically from an organisation responsible almost totally for aviation forecasting to one whose primary task is the provision of environmental services in support of the Fleet. This change has occurred without any significant alteration in the aviation services. Fleet-generated demand for meteorological and oceanographic services has continued to increase during the past 12 months, and recently it has been assessed that approximately 80% of the output of the Meteorological Office is directed to Fleet Units.

Signalled Meteorological Forecasts to the Fleet may be divided into six main categories:

a. Sydney/Jervis Bay maritime forecast
(issued twice daily 365 days/year)

b. Area Bass maritime forecast
(issued twice daily 365 days/year)

c. 'Tailored' maritime forecasts
(issued twice daily when requested by individual units)

d. Three day prognosis
(issued three time per week)

e. Strong wind/gale/cyclone warning advisory signals
(issued to Fleet and individual units as necessary)

f. Ballistic data
(issued when requested by indivdual units)

Although most of the above requirements have tended to remain at the same level, 'tailored' forecasts have continued to increase and have helped to expand the total number of environmental signals to 7,400 over the past year. Large variations in the monthly load occur and, in May 1983, a new record of 854 signals was achieved. While demand for meteorological services cannot be measured accurately by signal output alone, a definite trend in the forecasting committments of the office is indicated.

The introduction, in April 1982, of the Fleet requirements for a three day prognosis to be produced three times per week has increased forcasting hours by an average of 13 hours per week and has been a contributing factor in the average weekly workload of watchkeeping forecasters being raised to 47 hours.

Aviation forecasting requirements have remained at approximately the same level and despite the recent decisions concerning the future of fixed-wing aircraft in the RAN, no significant change in aviation forecasting requirements is anticipated.

Under current investigation is the prospect of providing Electromagnetic Atmospheric Refraction Forecasts for the Fleet. The aim is to provide ray trace diagrams which will indicate radar and radio coverage that can be anticipated so that this information can be used in tactical planning.

Meteorological Observations

A full surface and upper-air observing station (station number 94 750) exists at the Naval Air Station. All observations are supplied to the Bureau of Meteorology by landline. The Naval Air Station is connected to the Bureau of Meteorology's landline teleprinter and facsimile system, and receives all the observations required to analyse and forecast for the Australian Meteorological area by this means.

Meteorological Training

Meteorological training has continued to increase with the introduction of the meteorological component of the Long Navigation Course and additional Midshipman Stage III courses. All RAN Meteorological Observers are trained in basic observing, advanced observing and office management, radar windfinding and radiosonde operation. Shore familiarization courses are conducted for a variety of other Service personnel.

Two Lieutenants undertook the Introductory Meteorological Officers Course during November prior to posting to the Royal Navy Meteorological and Oceanographic Course due to complete in July 1983.

Senior High School classes from the local and Sydney areas have continued to visit the Meteorological Office to consolidate their Geography studies. During the past 12 months, 223 students have been instructed by Meteorological Office staff.

Implementation of oceanographic forecasts and increased demands for meteorological support by Fleet Units, together with the expanding training responsibilities of the meteorological organisation, have resulted in an *ad hoc* complement submission which proposes an increase of two personnel to develop a training cell, which will be separated from the forecasting commitments of the organisation.

America's Cup

At the request of one of the Australian challengers for the America's Cup, an experienced weather forecaster, Lieutenant Commander K.L. Hancock RAN, has accompanied the Australian contingent to Newport to provide the detailed forecasts required by the 12m boats. Lieutenant Commander Hancock left Australia during May and could be required in Newport until the end of September 1983 if an Australian boat is the successful challenger for the Cup.

6. PERSONNEL

Naval

A comprehensive review of the Uniformed Organisation, Management and Manpower of the RAN Hydrographic Service was completed during the year. This review addressed the period 1983 – 1993. Although major reviews of facets of the Hydrographic Service have been carried out in the past, this was the first comprehensive review undertaken since the formation of the Hydrographic Service in 1920. This review will be the subject for further action in the coming year.

There has been an overall increase of 5 in the numbers of hydrographic specialist officers during the year, with six officers successfully passing the Basic Hydrographic course and one officer leaving the RAN for personal reasons. One officer has been promoted to Commander, whilst another has been selected for promotion to Captain. Several more junior officers have transferred to the General List or extended their period of service on the Supplementary List.

One Royal Naval officer who has been on loan service in Australia for 2 years will return shortly to UK without replacement. The routine 2 year exchange of an RN and RAN officer has continued. A 6-months' exchange for a junior surveying officer between RAN and RNZN took place between January and June 1983 and is expected to continue in future years. The RAN officer will remain in New Zealand for an additional 12 months, whilst a more senior RNZN officer will spend the next year in the Hydrographic Office in Sydney. In May 1983 an RAN officer went to Fiji on 6 months exchange whilst an RFMF officer gained experience in Australia.

A CPOSR has continued the loan service arrangements in support of the Solomon Islands Hydrographic Unit under the auspices of the Defence Co-operation Programme. A four month exchange with the Royal Navy by a senior sailor, deferred from 1982 because of the Falklands conflict, will take place in the latter part of 1983.

Civilian

Civilian staffing levels throughout the year rose from 59 to 72. This included new recruitment to 21 positions with a wastage of 8. The number of Naval Defence Act employees remained at 2 with trainee/cadet levels of 7 as at the 30th June. The additional manning levels were applied to new functions or existing functions that had previously been inadequately serviced. These functions included:

Administration
Science Operations (AODC)
Servicing International Arrangements
Charting Standards
Computing System Support
Screen Printing
Sailing Directions and Maritime Boundaries

7. TRAINING

Uniformed

The RAN Hydrographic School at H.M.A.S. PENGUIN, has continued to run a very full training programme during the year for both officers and sailors with a total of 43 students trained. The Basic Hydrographic course (H4) conducted by this school is recognised internationally as training a category 'B' surveyor.

During the year a second officer's billet was established at the School in order to revise all course syllabi and bring them into line with the RANTS documentation format. The priority is to complete the H4 course first and then to move on to the ADVSR and SMNSR courses. It is estimated that the full documentation of the H4 course will take 18 months to prepare, and will be ready for the 1984-85 H4 courses.

Training under the auspices of the Defence Co-operation Programme (DCP) has continued at a high level and the School will commence, in January 1984, to run a dedicated H4 course for DCP students. It is then envisaged that two H4 courses will be programmed per year, the DCP H4 course from January until June, and the RAN H4 course from July until December.

During April 1983 the Officer-in-Charge visited Malaysia under the auspices of the DCP to advise on the establishment of a Hydrographic School for the Royal Malaysian Navy.

Details of students trained at the Hydrographic School during this period are:

Course		*Number of Students*	*Qualified*	*Remarks*
H4	1/82-83	10	10	2 RMN, 1 PN 1 Solomon Islander
ADVSR	1/82-83	6	5	2 RNZN
ABSR	1/82-83	4	4	1 Indonesian
ABSR	2/82-83	4	4	All RAN
ABSR	3/82-83	4	Continuing	3 Fijians
University of New South Wales		10	10	Students undertaking hydrographic elective
Refresher Course		3	3	
Side Scan Sonar		2	2	MSB Students

Advanced training in hydrographic surveying is undertaken at the Royal Navy's Hydrographic School in Plymouth. It is expected that an average of four officers will undergo this training every two years. Tertiary qualifications in surveying are also being obtained by 7 officers at the University of New South Wales, whilst another is soon to enter Western Australia's Institute of Technology.

Civilian

Considerable resources have been devoted to training and instruction throughout the year. From a base of 51 permanent staff, training was provided for some 40 additional employees. These included 21 new recruits, 9 trainee cartographic draftsmen, 9 Special Youth Employment Training Scheme participants, and one Solomon Islands Cartographer.

INSTRUCTION AT THE HYDROGRAPHIC SCHOOL

SMNSR Clements (RAN), OSSR Naboseyawa (RFMF), POSR Nielson (RAN), OSSR Narayan (RFMF) and OSSR Kumar (RFMF)

8. CHART PRODUCTION

The demand on office production resources has again been high. During the year a total of 182 work orders were processed. Tasks varied greatly with available resources divided between Chart Production, Defence requirements and training.

Chart Production effort resulted in 9 New Charts and 28 New Editions. The King George Sound (Albany) area was completed with the publication of Aus 109, 110 and 118. Two new charts have been constructed covering the northern area of the outer Great Barrier Reef; Aus 837 has been published, and Aus 836 will follow shortly. Production of these charts was lengthy and involved the use of satellite imagery to confirm reef definition in this difficult area. Aus 182 was published covering ports in Victoria in the Corner Inlet and Lakes Entrance areas. Three pleasure craft charts extend the coverage of this series to Botany Bay, Port Hacking and Georges River. New Editions were necessary to cover the introduction of the Great Barrier Reef two-way route and IALA changes in various ports.

Aus 111 provides coverage of the HMAS Stirling area. Aus 5015 was published as a New Edition for the purposes of Search and Rescue. Various charts and chartlets were produced for Defence exercise purposes.

Considerable effort has been necessary for training both in computer based and traditional chart compilation techniques and included the introduction of a training programme for overseas hydrographic office staff, utilised this year by a colleague from the Solomon Islands.

NEW CHARTS PUBLISHED

Number	*Title and Limits*	*Scale*
Aus 109*	Australia — South Coast — Western Australia Port of Albany	1:12 500
	Limits: Lat. 35°01'30".0S., 35°05'55".0S. Long. 117°50'30".0E., 117°58'59".7E.	
Aus 110*	Australia — South Coast — Western Australia King George Sound	1:25 000
	Limits: Lat. 35°59'04".1S., 35°07'54".0S. Long. 117°54'48".0E., 118°11'46".8E.	
	Plan: Oyster Harbour	1:25 000
	Limits: Lat. 34°56'24".8S., 35°00'12".0S. Long. 117°56'06".0E., 117°58'53".5E.	
Aus 111* & Aus 5042*	Australia — West Coast — Western Australia Careening Bay and Approaches	1:7 500
	Limits: Lat. 32°11'10".8S., 32°15'22".4S. Long. 115°40'13".3E., 115°43'20".4E.	
	Plan: Sulphur Bay	1:7 500
	Limits: Lat. 32°10'24".0S., 32°11'10".8S. Long. 115°40'21".0E., 115°41'18".0E.	
198-1 PC*	Australia — East Coast — New South Wales Georges River	1:25 000
	Limits: Lat. 33°57'24".0S., 34°01'54".0S. Long. 151°01'24".0E.. 151°09'30".0E	
198-2 PC*	Australia — East Coast — New South Wales Port Hacking	1:25 000
	Limits: Lat. 34°01'02".0S., 34°05'32".0S. Long. 151°03'18".0E., 151°11'24".0E.	
199 PC*	Australia — East Coast — New South Wales Botany Bay	1:25 000
	Limits: Lat. 35°56'42".0S., 34°01'12".0S. Long. 151°08'18".0E., 151°16'24".0E.	
Aus 182*	Australia — South Coast — Plans in Victoria. South East Coast	
	Plan: Lewis Channel	1:25 000
	Limits: Lat. 38°42'00".0S., 38°45'30".0S. Long. 146°24'54".0E., 146°28'24".3E.	
	Plan: Approaches to Port Albert	1:15 000
	Limits: Lat. 38°40'00".0S., 38°45'05".8S. Long. 146°39'30".0E., 146°42'15".0E.	
	Plan: Approaches to Barry Beach	1:12 500
	Limits: Lat. 38°42'18".0S., 38°44'43".2S. Long. 146°21'48".0E., 146°23'33".2E.	
	Plan: Approaches to Lakes Entrance	1:5 000
	Limits: Lat. 37°52'41".0S., 37°54'22".9S. Long. 147°57'39".2E., 147°59'30".0E.	
Aus 837	Australia — East Coast — Queensland Olinda Entrance to Maer Island	1:150 000
	Limits: Lat. 9°48'00".0S., 11°20'54".5S. Long. 143°10'00".0E., 144°09'22"E.	

* *Denotes Metric Chart*

NEW EDITIONS PUBLISHED

Number	*Title and Limits*	*Scale*
Aus 55* & L(D8) 55*	Australia – NW Coast – Western Australia Approaches to Port Walcott	1:50 000
	Limits: Lat. 20°22'06".0S., 20°39'48".0S. Long. 117°00'00".0E., 117°29'42".0E.	
Aus 81*	Australia – West Coast – Western Australia Approaches to Geraldton	1:25 000
	Limits: Lat. 28°43'18".0S., 28°47'36".0S. Long. 114°30'00".0E., 114°37'25".1E.	
	Plan: Port of Geraldton	1:7 200
	Limits: Lat. 28°45'42".0S., 28°45'57".3S. Long. 114°34'42".0E., 114°36'50".3E.	
Aus 112*	Australia – West Coast – Western Australia Approaches to Fremantle	1:37 500
	Limits: Lat. 31°51'30".0S., 32°04'30".0S. Long. 115°25'30".0E., 115°52'00".0E.	
Aus 112Y*	Australia – West Coast – Western Australia Approaches to Fremantle	1:37 500
	Limits: Lat. 31°51'30".0S., 32°04'30".0S. Long. 115°25'30".0E., 115°52'00".0E.	
	Plan: Thomson Bay	1:10 000
	Limits: Lat. 31°59'18".0S., 32°00'18".0S. Long. 115°32'18".0E., 115°33'48".0E.	
Aus 113*	Australia – West Coast – Western Australia Port of Fremantle	1:7 500
	Limits: Lat. 32°01'47".5S., 32°04'26".0S. Long. 115°40'48".7E., 115°45'44".3E.	
Aus 154*	Australia – South Coast – Victoria Port Melbourne	1:7 500
	Limits: Lat. 37°48'16".2S., 37°52'48".0S. Long. 144°53'33".6E., 144°56'54".0E.	
Aus 198*	Australia – East Coast – New South Wales Botany Bay and Port Hacking	1:25 000
	Limits: Lat. 33°56'42".0S., 34°05'32".1S. Long. 151°01'24".0E., 151°18'10".4E.	
Aus 292*	Australia – East Coast – Queensland Adolphus Channel to Harvey Rocks	1:75 000
	Limits: Lat. 10°13'30".0S., 10°55'30".0S. Long. 142°25'00".0E., 142°51'52".0E.	
Aus 293*	Australia – North Coast – Torres Strait	1:37 500
	Limits: Lat. 10°22'00".0S., 10°35'17".0S. Long. 142°06'30".0E., 142°27'44".0E.	
Aus 296*	Australia – North Coast – Torres Strait Goods Island to Proudfoot Shoal	1:75 000
	Limits: Lat. 10°21'00".0S., 10°47'35".0S. Long. 141°27'30".0E., 142°09'59".0E.	
	Plan: Gannet Passage	1:25 000
	Limits: Lat. 10°33'59".0S., 10°36'30".0S. Long. 141°51'42".0E., 141°55'42".0E.	

* *Denotes Metric Chart*

Number	*Title and Limits*	*Scale*
Aus 576	South-West Pacific Ocean — Bismarc Archipelago	
	Admiralty Islands	1:250 000
	Limits: Lat. 1°45'00"S., 3°12'30"S.	
	Long. 145°53'00"E., 148°20'00"E.	
	Plan: Nares Harbour	1:75 000
	Limits: Lat. 1°53'00"S., 2°00'00"S.	
	Long. 146°34'00"E., 146°43'00"E.	
	Plan: St. Andrew Anchorage	1:37 500
	Plan: Kelava Harbour	1:25 000
Aus 700*	Australia — North Coast — Queensland	
	Western Approaches to Torres Strait	1:150 000
	Limits: Lat. 10°17'17".0S., 11°15'59".0S.	
	Long. 140°47'00".0E., 142°20'54".0E.	
Aus 740* &	Australia — NW Coast — Western Australia	
L(D4)(D8) 740*	Port Hedland to Port Walcott	1:50 000
	Limits: Lat. 19°53'54".0S., 20°47'00".0S.	
	Long. 117°03'00".0E., 118°39'18".0E.	
	Plan: Depuch Island Anchorage	1:20 000
	Limits: Lat. 20°34'58".0S., 20°37'57".0S.	
	Long. 117°42'07".0E., 117°45'25".0E.	
Aus 741* &	Australia — NW Coast — Western Australia	
L(D8) 741*	Approachess to Dampier Archipelago	1:150 000
	Limits: Lat. 19°17'12".0S., 20°48'00".0S.	
	Long. 116°20'00".0E., 117°18'12".0E.	
Aus 777*	Australia — South Coast — South Australia	
	Winceby Island to Point Riley	1:150 000
	Limits: Lat. 33°40'42".0S., 34°30'06".0S.	
	Long. 136°06'00".0E., 137°39'54".0E.	
	Plan: Franklin Harbour	1:50 000
	Limits: Lat. 33°41'00".0S., 33°45'48".0S.	
	Long. 136°55'26".0E., 136°59'00".0E.	
	Plan: Wallaroo Bay	1:35 000
	Limits: Lat. 33°52'46".0S., 33°56'22".0S.	
	Long. 137°32'42".0E., 137°38'02".0E.	
Aus 830*	Australia — East Coast — Queensland	
	Russell Island to Low Islets	1:150 000
	Limits: Lat. 16°21'50".0S., 17°19'01".0S.	
	Long. 145°15'00".0E., 146°48'54".0E.	
	Plan: Port Douglas	1:10 000
	Limits: Lat. 16°28'12".0S., 16°29'12".0S.	
	Long. 145°27'18".0E., 145°28'18".0E.	
Aus 831*	Australia — East Coast — Queensland	
	Low Islets to Cape Flattery	1:150 000
	Limits: Lat. 14°56'36".0S., 16°27'36".0S.	
	Long. 145°09'30".0E., 146°08'56".0E.	

* *Denotes Metric Chart*

Number	*Title and Limits*	*Scale*
Aus 832*	Australia – East Coast – Queensland Cape Flattery to Barrow Point	1:150 000
	Limits: Lat. 14°16'00".0S., 15°13'47".0S. Long. 144°30'00".0E., 146°03'54".0E.	
	Plan: Howick Group	1:75 000
	Limits: Lat. 14°25'30".0S., 14°33'30".0S. Long. 144°48'00".0E., 145°03'00".0E.	
	Plan: Cape Flattery	1:45 000
	Limits: Lat. 14°53'00".0S., 14°58'00".0S. Long. 145°17'30".0E., 145°22'00".0E.	
Aus 833*	Australia – East Coast – Queensland Barrow Point to Claremont Isles	1:150 000
	Limits: Lat. 13°35'02".0S., 14°33'00".0S. Long. 143°35'04".0E., 145°09'00".0E.	
	Plan: Flinders Group	1:75 000
	Plan: Cape Melville to Pipon Islets Limits	1:75 000
Aus 834*	Australia – East Coast – Queensland Claremont Isles to Cape Weymouth	1:150 000
	Limits: Lat. 12°22'00".0S., 13°54'02".0S. Long. 143°13'08".0E., 144°12'30".0E.	
	Plan: Approaches to Heath Reef	1:50 000
	Limits: Lat. 13°21'54".0S., 13°32'12".0S. Long. 143°38'06"E., 143°43'42".0E.	
Aus 835*	Australia – East Coast – Queensland Cape Weymouth to Cairncross Islets	1:150 000
	Limits: Lat. 11°10'00".0S., 12°42'28".0S. Long. 142°36'00".0E., 143°35'22".0E.	
Aus 839*	Australia – North East Coast – Queensland Cairncross Islets to Arden Island	1:150 000
	Limits: Lat. 9°48'00".0S., 11°20'55".0S. Long. 147°18'00".0E., 143°17'22".0E.	
Aus 4601* (INT 601)	South Pacific Ocean – Tasman Sea New Zealand to S.E. Australia	1:3 500 000
	Limits: Lat. 33°30'00".0S., 49°28'41".0S. Long. 142°30'00".0E., 175°50'09".0E.	
Aus 5020A	Index of Australian Charts Northern Portion	
Aus 5020B	Index of Australian Charts Southern Portion	

* *Denotes Metric Chart*

CHARTS IN PRODUCTION (30th June, 1983)

NC – New Chart NE – New Edition

No.	*Category*	*Title*	*Scale*	*State*
Aus 105	NE	Wedge Island to Lancelin	1:50 000	WA
Aus 5041	NE	Lancelin	1:50 000	WA
Aus 759	NC	Point Hillier to Bald Island	1:150 000	WA
Aus 336	NC	Cape Leeuwin to King George Sound	1:300 000	WA
Aus 335	NC	Cape Naturaliste to Point D'Entrecasteaux	1:300 000	WA
Aus 836	NC	Cape Weymouth to Olinda Entrance	1:150 000	Q
Aus 376	NC	Torres Strait	1:300 000	Q
Aus 181	NC	Corner Inlet	1:50 000	Vic
Aus 745	NC	North West Cape to Maud Landing	1:150 000	WA
Aus 754	NC	Lancelin to Cape Peron	1:150 000	WA
Aus 755	NC	Cape Person to Cape Naturaliste	1:150 000	WA
Aus 334	NC	Ledge Point to Cape Naturaliste	1:300 000	WA
Aus 744	NC	Exmouth Gulf and Approaches	1:150 000	WA
Aus 244	NC	Plans in Port Curtis		Q
Aus 245	NC	Port Curtis	1:25 000	Q
Aus 246	NC	Approaches to Port Curtis	1:37 500	Q
Aus 238	NE	Brisbane River	1:12 500	Q
Aus 237	NE	Brisbane River	1:12 500	Q
Aus 200	NE	Port Jackson	1:20 000	NSW
Aus 201	NE	Port Jackson (Eastern Sheet)	1:7 500	NSW
Aus 202	NE	Port Jackson (Central Sheet)	1:7 500	NSW
Aus 203	NE	Port Jackson (Western Sheet)	1:10 000	NSW
Aus 137	NE	Port Adelaide	1:12 500	SA
Aus 259	NE	Hinchinbrook Channel	1:50 000	Q
Aus 829	NE	Brook Island to Russel Island	1:150 000	Q
Aus 830	NE	Russell Island to Low Islets	1:150 000	Q
Aus 59	NC	Plans in Port Dampier		WA
Aus 4	NE	Approaches to Weipa	1:75 000	Q
Aus 205	NE	Newcastle Harbour	1:7 500	NSW
Aus 207	NE	Approaches to Newcastle	1:25 000	NSW
Aus 115	NE	Approaches to Bunbury	1:50 000	WA
Aus 32	NE	Cambridge Gulf	1:75 000	WA

CHARTS ON PROGRAMME (30th June 1983)

(Revised Quarterly)

NC – New Chart NE – New Edition

No.	*Category*	*Title*	*Scale*	*State*
Aus 751	NC	Houtman Abrolhos and Geelvink Channel	1:150 000	WA
Aus 333	NC	Geraldton to Ledge Point	1:300 000	WA
Aus 332	NC	Quobba Point to Geraldton (southern sheet)	1:300 000	WA
Aus 417	NC	Geraldton to Cape Leeuwin	1:1 000 000	WA
Aus 328	NC	Monte Bello Islands to North West Cape	1:300 000	WA
Aus 415	NC	Cape Leveque to North West Cape	1:1 000 000	WA
Aus 416	NC	Monte Bello Islands to Geraldton	1:1 000 000	WA
Aus 58	NC	Approaches to Port of Dampier	1:37 500	WA

NOTE: Immediate requirements outside this programme are met by chart maintenance and revision procedures. See revised charts under Chart Printing.

MISCELLANEOUS PRODUCTS

Australian facsimile reproduction of British Admiralty Charts. (4)

Australian modified reproduction of British Admiralty Charts. (1)

Publications – (2)

Australian National Tide Tables 1982 (AHP 11)
Annual Summary of Australian Notices to Mariners – Jan. 1983

Fleet charting tasks (89)

Departmental cartographic reproduction (131)

CHART PRINTING

New Charts – 9
New Editions – 28
Revised Charts – 235
Reprinted Charts – 245
Facsimile Reproductions – 4
Modified Reproductions – 1
Charts for Fleet purposes – 1
Miscellaneous charts – 0

Chart printing by Survey Regiment Bendigo, Victoria – 523 charts; 163 400 copies

9. CHART ISSUES AND SALES

During the year to 30 June 1983, a total of 196,893 charts and publications were issued through the Chart Depot and sold through the Chart Agency, representing an increase by volume of 3¼% over the previous year.

Due to the marked increase in workload caused by the introduction of Sales Tax and other factors, and because these occurred at a time of severe staff shortages and imposed manning ceilings, it was reluctantly decided to withdraw the Counter Sales services to the general public in October 1982. This has resulted in the total revenue from sales ($694,989) being barely higher than in the previous year as more customers made use of neighbouring chart agencies who thereby gained the benefit of the retail margin. The Mail Order service has been retained, however, and continues to flourish.

Sales Tax on charts was introduced in January 1983, causing considerable administrative turmoil. During the first six months a total of $15,457 was levied in respect of this tax from customers unable to claim exemptions.

During the first half of 1983, the new stock control and management computer (HYDROSTOK) was installed and will shortly be put into operation. On 1 July 1983, the Hydrographic Office will also assume full control of Account Customer billing which was previously carried out by the Regional Finance Office. HYDROSTOK will assist in the functions of accounting and invoicing.

Negotiations are currently taking place with the domestic chart agents with a view to introducing a new agency agreement for the sale of charts and publications from 1 October 1983. Some of the present agreements have been in existence for many years and there is a need to bring them up to date to suit modern conditions. It is probable that similar agreements will be reached with overseas agents in due course.

There are currently 15 'A' class agents authorised (of whom 10 are overseas) and 61 'B' class agents (of whom 3 are in Papua New Guinea). The new agency agreement will remove the distinction between 'A' and 'B' classes of agency, and will allow a greater flexibility in [illegible] pricing to take account of transportation costs and, importantly, the standard of service provided to the customer especially in respect of hand correction of charts.

10. NOTICES TO MARINERS

It is pleasing to note the increased number of Hydrographic Notes recording the positions of offshore features by Satellite navigation. Admiralty Notice to Mariners 3007/82 (reproduced in Australian weekly edition 2/83) also requested mariners to render observations of Satellite Derived Positions. Observations are passed to the relevant authorities for processing, but it is important to note that all recorded data, on magnetic tape or paper, taken during each satellite pass used in the position, should be provided.

The introduction of the Two Way Routeing Scheme in the northern Great Barrier Reef, between Low Islets and Booby Island, has necessitated replacement of former recommended tracks on relevant Australian and Admiralty Charts by New Editions. The new scheme will become operational on 1 September, 1983, but is not mandatory.

The former practice of quoting references to Admiralty Sailing Directions in Notices to Mariners, now changed by Admiralty Notice 2941/81, will be continued in Australian Notices until further notice (but not repromulgated in Admiralty Notices) (AUS NM 115/82 refers).

Statistics for period ended 30 June 1983 are as follows (figures in brackets are those for the previous year):-

*H/Notes from H.M.A. Ships	117	(98)
H/Notes from other sources	88	(96)
Notices to Mariners	835	(684)
Blocks for Charts	29	(28)
Blocks for Cautions etc	24	(62)

* Additional details are contained in Appendix VI

11. SAILING DIRECTIONS AND MARITIME BOUNDARIES

Sailing Directions

Since the first publication of Australian charts and of the Australian National Tide Tables, the need to complement them with Australian Sailing Directions has become increasingly evident. During the year a new member of staff was appointed with the primary task of producing these Sailing Directions, but also of providing advice on matters concerning maritime boundaries.

Procedures are being established for identifying sources of information, searching and investigating records, setting book-design and editorial standards, compiling the text and graphic material, and arranging production.

Sailing Directions for a short section of the north-west coast of Western Australia are currently being compiled, partly as an exercise to assist in identifying problems that will arise, but also to provide information from which to estimate man-hour requirements for preparing a production programme.

As an essential aid towards compiling the Sailing Directions, a gazetteer and index to the sources and authentication of maritime geographical names, is being prepared for the area between the coast of Queensland and the outer edge of the Great Barrier Reef from the latitude of 18°S to that of Cape York. This gazetteer and index will eventually be extended to cover all maritime geographical names to appear in the Australian Sailing Directions.

The provision of photography and sketches of coastal and harbour approaches' for inclusion amongst the Views published in Sailing Directions or to update those on published charts, is still required to improve the guidance given to mariners. NP 140 (Views for Sailing Directions), published by the Hydrographic Department, Taunton, is a most useful guide for this purpose.

Maritime Boundaries

The subject of maritime boundaries is becoming increasingly important to mariners due to recent developments in the interpretation of international law with respect to claims by coastal states of sovereign and quasi-sovereign rights over areas of the sea previously considered not to be subject to such claims.

At a meeting with the Division of National Mapping in March 1983 agreement was reached on the positions of the Lowest Astronomical Tide low-water lines along the coast of Victoria to a degree of precision consistent with mapping territorial base-lines at the scale of 1:100,000. It is expected that similar determinations of territorial baselines at that mapping scale for other states will be necessary in the near future.

During April 1983, at a meeting of the Maritime Services Advisory Committee, where the needs of mariners for maritime boundaries to be shown on navigational charts were discussed, it was decided that the outer limits of Australia's Exclusive Fishing Zone should continue to be shown on charts of appropriate scale. It is not at present intended to depict other offshore boundaries. However, it is expected that national baselines, especially where straight lines depart from the low-water line, will progressively be shown on navigational charts as an aid to mariners.

12. TIDES

Personnel

In April 1983, the occupant of the position of Tidal Officer within the Hydrographic Office, Mr. P. Kelly, proceeded on 12 months leave without pay. The position has been temporarily filled by Mr. Alan Marshall.

Australian National Tide Tables. (ANTT)

2500 copies of the 1983 edition were printed for the Hydrographic Service. An additional 1500 copies were printed by the Australian Government Printing Service for distribution through its own outlets.

Predictions for inclusion in the ANTT are provided by a large number of Australian Port and Maritime Authorities. These predictions are supplied on magnetic tape by the Institute of Oceanographic Sciences (IOS) Bidston, UK (39 Ports) Flinders Institute for Atmospheric and Marine Sciences, Flinders University (FIAMS), South Australia (17 Ports), Harbour and Rivers Branch, Public Works Department of Western Australia (7 Ports) and Associated Surveys (1 Port). The Hydrographic Department, Ministry of Defence, United Kingdom provided predictions for three ports in Papua New Guinea, together with the astronomical arguments appearing in the front of ANTT. The Hydrographer RAN greatly appreciates the co−operation with these organisations from which the data for ANTT are collated for publication.

The 1984 edition of ANTT will include predictions for 67 standard ports and 1 entry for predicted tidal stream.

Hydrographic Surveys

Tidal support for RAN Hydrographic Survey Ships has continued throughout the year. Tidal data have been received from these ships on completion of the various surveys undertaken throughout the year.

Advice and support on tidal matters has also been provided to other survey authorities both in the public and private sectors.

Chart Production and Chart Datum Determination.

The Lowest Astronomical Tide (LAT) datum has been determined for new charts and editions as required. The area of coast receiving priority has been that between Bunbury and Geraldton on the West Coast.

As a consequence of the Constitutional Settlement between the Commonwealth, State and Territory Governments on base lines, territorial waters and offshore jurisdiction (based on gazetted straight base lines and LAT), Crown Law Offices have made inquiries as to the level of LAT in certain areas.

National Mapping Council, Permanent Committee on Tides and Mean Sea Level.

The Hydrographic Office has remained active in both the Permanent Committee and the Working Group associated with it. Due to the change over of Tidal Officers, representatives from the Hydrographic Office did not attend one meeting of the Working Group.

13. EQUIPMENT

Autochart

The Kongsberg plotter has been installed satisfactorily and acceptance tests were in progress at the time of writing. Indications are that high quality results will be achieved. The system upgrade to six input stations has been successfully integrated into the input sub-system. Interactive editing stations with graphics capabilities are planned for introduction during next Financial Year.

Hydrographic Information System

The proposed Hydrographic Information System, incorporating the Hydrographic Data Base, has been proven feasible following the period of the Systemhouse Ltd. consultancy. The draft tender documents are in preparation. Probable equipment configurations will comprise graphics workstations interacting with a dedicated data base central processor.

Hydrostok

The equipment has been installed and comprises Three Terminex VDUs and two General Electric printers working from an Alpha-Micro AM 1041S CPU. The system was supplied by Concise Data of Gordon, NSW and they provided their standard software which required minor changes to incorporate the Chart Folio System. Parallel runs will commence 1 July 1983 following substantial completion of data entry.

General

During the year the RAN Hydrographic service took delivery of 5 HP 85 Personal Computers. An additional HP85 was purchased under DCP for the Solomon Islands Hydrographic Unit.

The Hydrographic Service Co-ordinatorgraph (which was replaced by Auto chart) was transferred to the Fijian Hydrographic Unit. This transfer was also funded by DCP.

HMAS FLINDERS and her attached SMB are currently being fitted with the Atlas Deso 20 echo sounder. An AD20 will also be fitted in the Hydrographic School's SMB. The school's existing AD10 will be retained for training purposes. Minor Equipment Proposal (MEP) has been progressed to replace the remaining AD10 in service with AD20's.

MEP's have also been progressed for replacement EDM equipment and for geodetic satellite receivers.

During the year HMA Ships MORESBY and FLINDERS were fitted with Magnavox MX1122 Satellite Navigation receivers.

14. LIBRARY

The Hydrographic Office library has continued during the period 1982-83 to provide its unique service as a specialised survey reference and record section, supporting hydrographic and oceanographic activities in Australia and overseas.

It has received and catalogued a variety of data, periodicals and journals from sources such as:

a. International authorities on hydrography, oceanography and marine sciences;
b. Academic institutions in Australia and overseas;
c. National Mapping Council members;
d. State and Federal government departments;
e. Harbour authorities and commercial maritime agencies; and
f. Private individuals;

In addition, essential routine assistance has been provided to the Autochart Section to enable chart production to progress, and also to the survey vessels undertaking hydrographic tasks. Survey data has been dispatched, when requested, to various authorities and organisations both in Australia and abroad.

Appendix II lists hydrographic information received during the year from non-service sources in Australia.

APPENDIX I

CHART AND DRAWING OFFICE PRODUCTION

	1978/79	1979/80	1980/81	1981/82	1982/83
New charts published for general use	9	7	7	2	9
New Charts/Diagrams for Naval use	1	1	38	52	1
New Editions for general use	9	14	6	17	28
New Editions for special purposes	–	2	–	–	1
Stock replenishment (Reprints & Revision)	345	360	295	484	480
Block Corrections for Aus. Notice to Mariners	5	15	14	20	29
Aus. Notice to Mariners issued	567	731	715	684	835
Aus. charts printed in U.K. (Facsimile Reproduction)	7	12	6	10	6
B.A. Charts printed in Australia (Facsimile Reproduction)	3	3	2	0	4
Hydrographic Notes from H.M.A. Ships	36	77	70	98	117
Hydrographic Notes from other sources	43	54	92	96	88
Modified facsimile of B.A. chart	–	–	1	0	1
*Fleet charting				161	96
*Departmental				166	131

**Not reported previously*

APPENDIX II

HYDROGRAPHIC INFORMATION FROM NON-SERVICE SOURCES

General Locality	*Title or Location of Survey*	*Sources*
QUEENSLAND		
Brisbane	Brisbane River/Terminals	Port of Brisbane Authority
Cairns	Cairns Harbour	Cairns Harbour Board
Gladstone	Within Harbour Area	Gladstone Harbour Board
Hydrographer's Passage	Landsat Images	C.S.I.R.O.
Lucinda	Sugar Wharf	Department of Harbours & Marine
Moreton Bay	North East/Western Channels	Port of Brisbane Authority
	Peel Is. to Russell Is.	Department of Harbours & Marine
Mourilyan	Wharf & Swing Basin	Department of Harbours & Marine
Port Clinton	River Approaches	Department of Harbours & Marine
Port Douglas	Within Port	Department of Harbours & Marine
Southport	Steliglitz to Southport	Department of Harbours & Marine
Urangan	Harbour Anchorage	Department of Harbours & Marine
Weipa	Within Port	Department of Harbours & Marine
Whitsunday Passage	Bowen	Department of Harbours & Marine
NEW SOUTH WALES		
Darling Harbour	Anchorage	Maritime Service Board
Newcastle	Terminals	Maritime Service Board
Port Jackson	Within Harbour	Maritime Service Board
Port Stephens	Port/Report of Survey	Maritime Service Board
Macleay River	Trial Bay	Public Works Department
Port Macquarie	Hasting River	Public Works Department
Richmond River	Richmond River Valley	Public Works Department
NORTHERN TERRITORY		
Darwin	Larrakeyah	Department of Administrative Services
	Within Port	N.T. Port Authority
TASMANIA		
Hobart	Within Port of Hobart	Marine Board of Hobart
VICTORIA		
Corner Inlet	Welshpool Shipping Pier	Public Works Department Port & Harbour Divisi
Little Snake Is.	Lewis Channel	Department of Crown Lands & Surveying
Long Is.	Lakes Entrance	Department of Crown Lands & Surveying
Melbourne	Swanson Dock	Port of Melbourne Authority
	Yarra River	Port of Melbourne Authority
WESTERN AUSTRALIA		
Bunbury Harbour	Approaches	Public Works Department
Cape Lambert	Offshore Investigations	Public Works Department
Garden Island	Cockburn Sound	Australian Survey Office WA
Leeman	Leading Lines	Public Works Department
Phillip Point	*Navigation Layout*	Woodside BHP
	Navigation Aids	Woodside BHP
Port Dampier	Navigation Layout	Dampier Harbour Master
Port Hedland	Within Harbour	Port Hedland Authority

Additional bathymetric and marine survey data were received from a variety of other sources throughout the year.

APPENDIX III

SALES AND ISSUES 1978-1983

R.A.N. CHART AGENCY AND CHART DEPOT

	1978/79	1979/80	1980/81 ($)	1981/82 ($)	1982/83 ($)
Aus. Charts sold by Agency	112,571	140,981	124,799 (448 801)	121,862 (557 676)	131,296 (565 857)
Aus. Charts issued by Depot	24,312	24,735	24,024	27,710	23,122
B.A. Charts sold by Agency	11,343	9,017	7,854 (53,231)	7,752 (57,537)	7957 (53,585)
B.A. Charts issued by Depot	12,067	14,986	16,454	11,273	14,605
N.Z. Charts sold by Agency	330	303	223 (768)	477 (2,800)	194 (1139)
N.Z. Charts issued by Depot	1,268	933	1,023	1,236	1,009
Misc. Charts issued by Depot	18,288	11,328	4,708	4,605	1,509
Canadian Charts sold by Agency			8 (40)	18 (90)	193 (965)
Total Charts Sold	124,244	150,301	132,876 (502,840)	130,091 (618,103)	139,640 (621,546)
Total Charts Issued	55,935	51,982	46,209	44,824	40,245
Aus. Publications Sold	2,113	1,970	1,739 (13,664)	1,861 (18,434)	1,435 (16,486)
Aus. Publications Issued	1,023	494	967	593	3415
B.A. Publications Sold	7,022	5,544	4,401 (50,133)	4,633 (58,209)	4,647 (56,957)
B.A. Publications Issued	4,841	4,221	5,351	6,011	5,766
Misc. Publications Sold	1,343	1,281	1,168 (*)	1,287 (*)	1,272
Misc. Publications Issued	449	543	400	461	473
N.Z. Publications Sold	–	4	–	–	–
Total Publications Sold	10,478	8,799	7,308 (63,797)	7,781 (76,643)	7,354 (73,443)
Total Publications Issued	6,313	5,258	6,718	7,065	9,654
Total Sales	134,722	159,100	140,184 (566,637)	137,872 (694 746)	146,994 (694,989)
Total Issued	62,248	57,240	52,927	51,889	49,899
TOTALS	196,970	216,340	193,111	189,761	196,893

(*) Value of Misc. Publications Sold is included in figures for Aus. Publications Sold

Note: Sales Tax on charts was introduced on 1 January 1983. During the first six months of 1983, $15,457 was levied in respect of this tax from customers unable to claim exemptions. This sum is not included in the above figures.

APPENDIX IV

MANPOWER

A. Hydrographic Surveying Specialists

The numbers of hydrographic surveying specialists in the Hydrographic Service on 30 June 1983 were:-

Captain		1	(RN Loan)
Commander		4	(1 RN Loan)
Lieutenant Commander		8	
Lieutenant/Sub Lieutenant		17	
CPOSR		5	
POSR		8	
LSSR		18	
ABSR/SMNSR		47	
Total:	Officers	30	(2 on loan)
	Sailors	78	

B. Naval Meteorological/Oceanographic Specialists

The numbers of meteorological/oceanographic specialists engaged in their specialists duties on 30 June 1983 were:-

Commander		2	
Lieutenant Commander		8	
Lieutenant		1	(and 2 under training)
Chief Petty Officer		1	
Petty Officer		4	
Leading Seaman		14	
Able Seaman		31	
Total:	Officers	13	(inc. trainees)
	Sailors	50	

C. Civilian

The following civilian members are employed in the Hydrographic Service:-

Public Service Act Positions

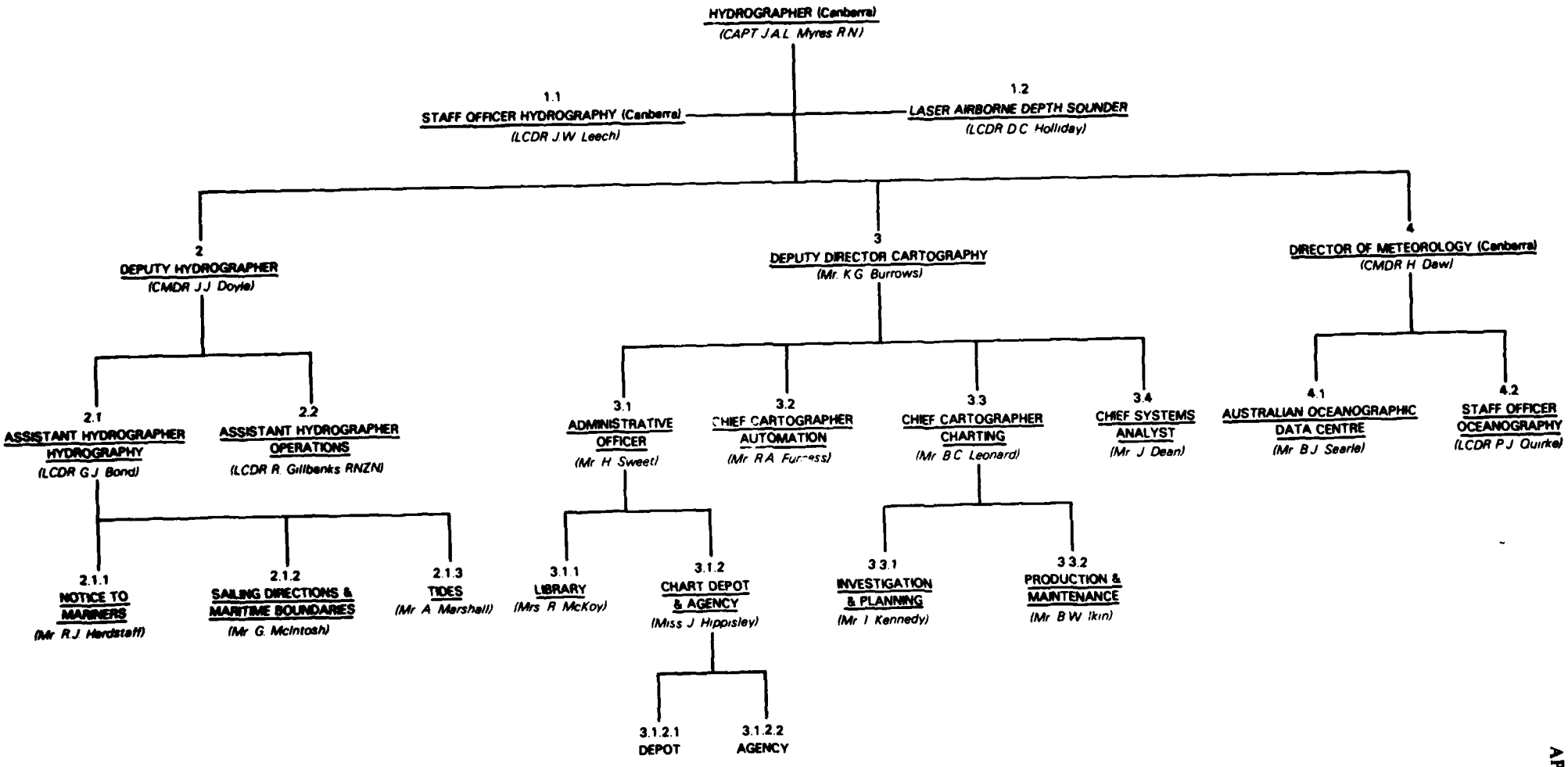
	Establishment	Ceiling	Manning
Executive	1	1	1
Cartographic	53	40	43
Systems Development	4	4	4
Administration	6	6	5
Library/Records	2	2	2
Distribution	13	12	11
Science Branch	3	2	2
Survey Branch	4	4	4
Totals	86	71*	72*

* Temporary excess of ceiling to 74 approved.

Naval Defence Act Position.	2	2	2
Trainee and Cadets	8	8	7

ROYAL AUSTRALIAN NAVY HYDROGRAPHIC SERVICE

ORGANIZATION CHART – EFFECTIVE 1.8.83



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Telex AUSHYD AA72669

APPENDIX V

APPENDIX VI

HYDROGRAPHIC NOTES

The following R.A.N. ships rendered five or more Hydrographic Notes during the course of the year:

BARBETTE	15
BUCCANEER	14
FLINDERS	5
IPSWICH	10
LABUAN	9
PERTH	5
SUPPLY	6
TOBRUK	5

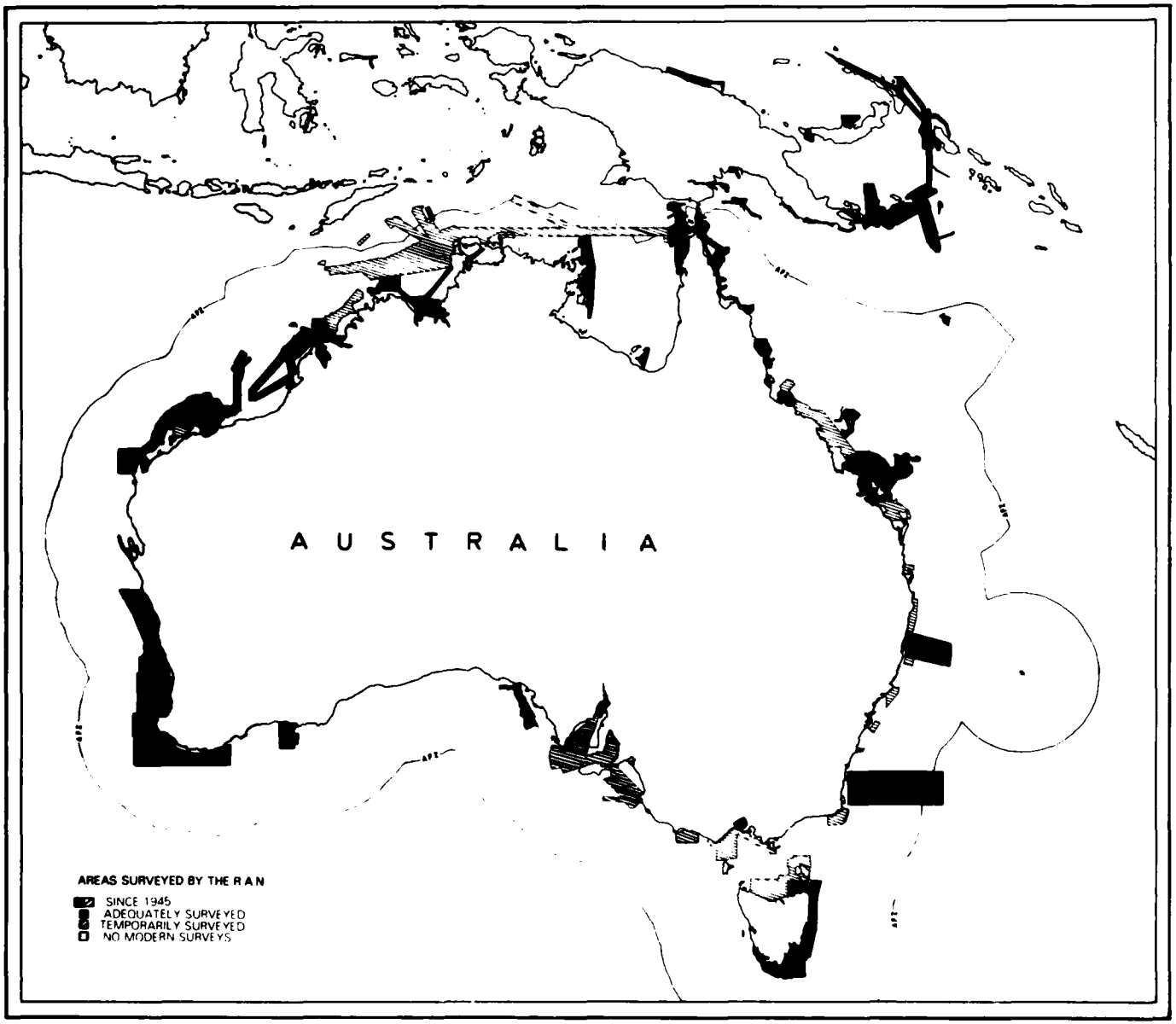
The remaining 48 Hydrographic Notes rendered by the Fleet were supplied by 23 ships and establishments, making a total of 117 individual Hydrographic Notes, an increase of 20% over the previous year.

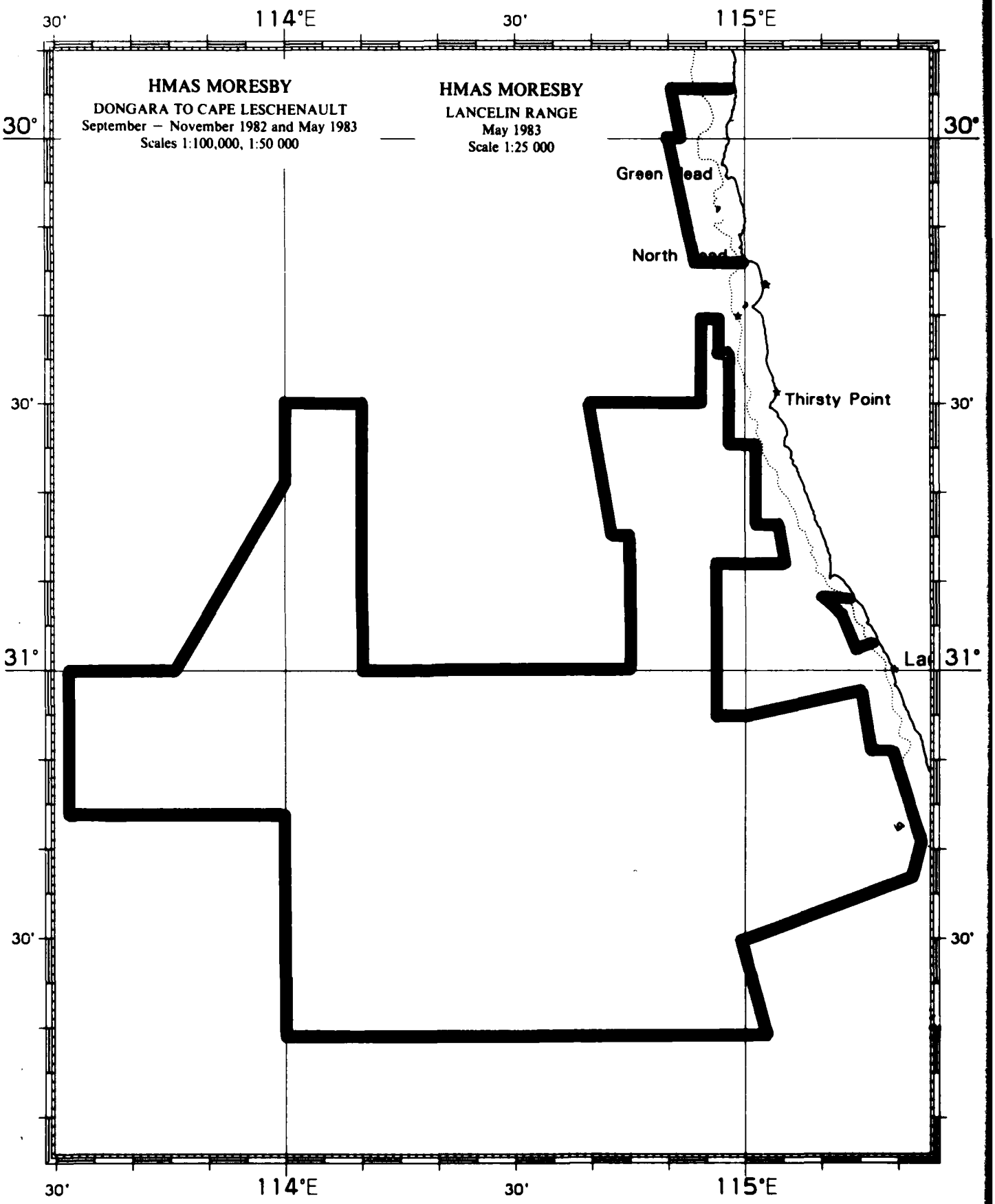
APPENDIX VII

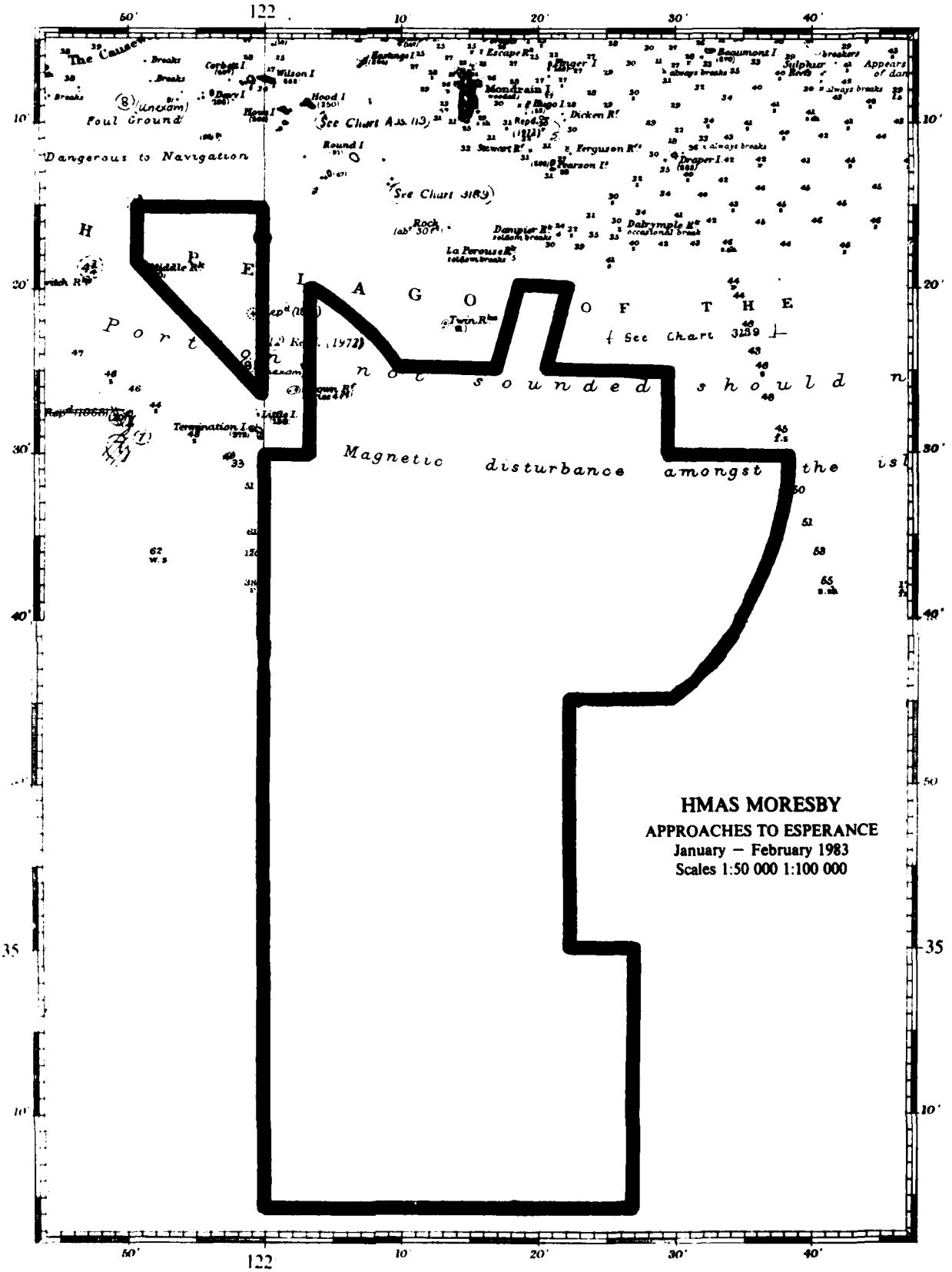
EXPENDABLE BATHYTHERMOGRAPH OBSERVATIONS

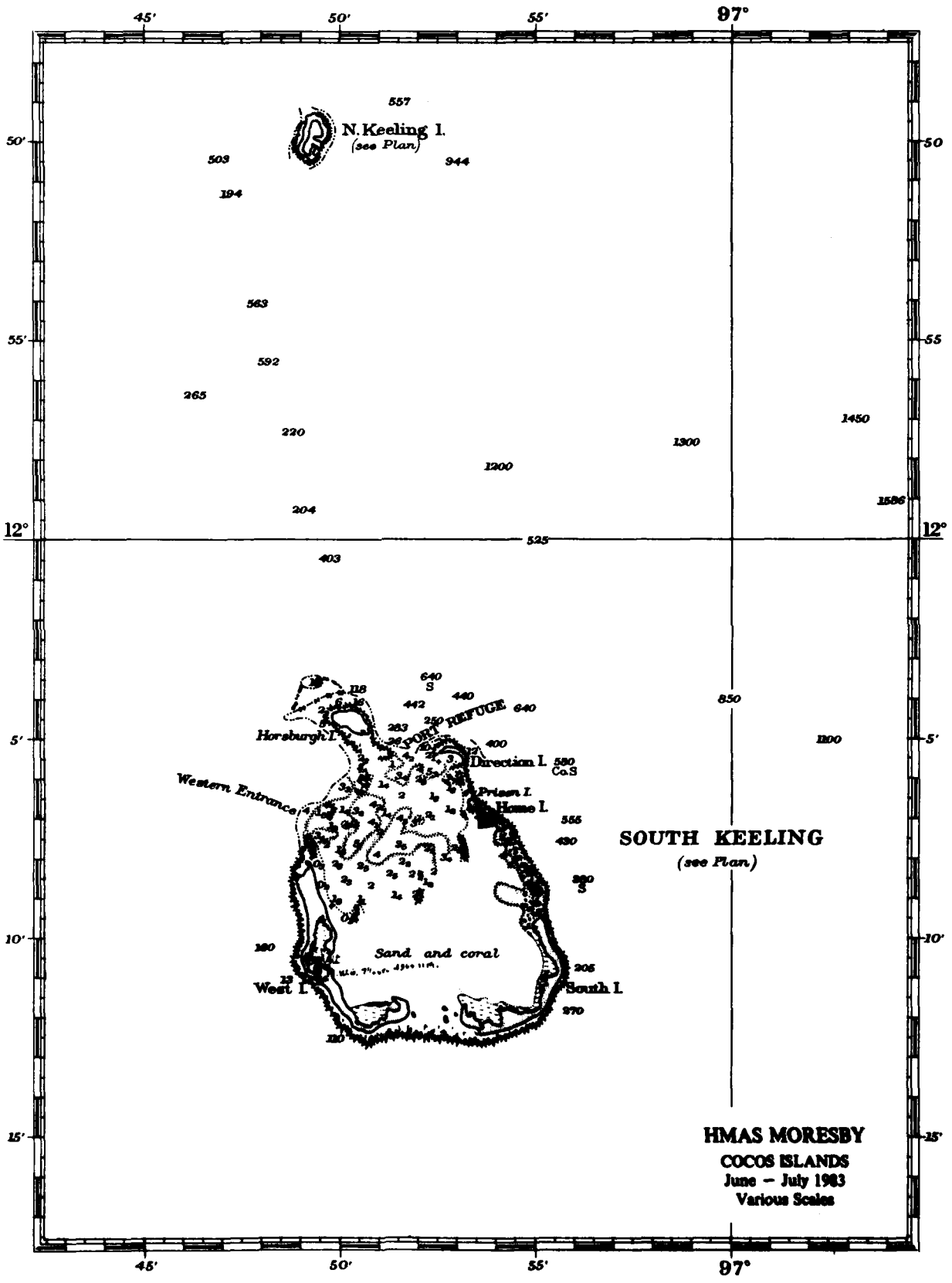
The following table shows the numbers of XBT's deployed by the R.A.N. and other authorities, and the numbers that were acceptable.

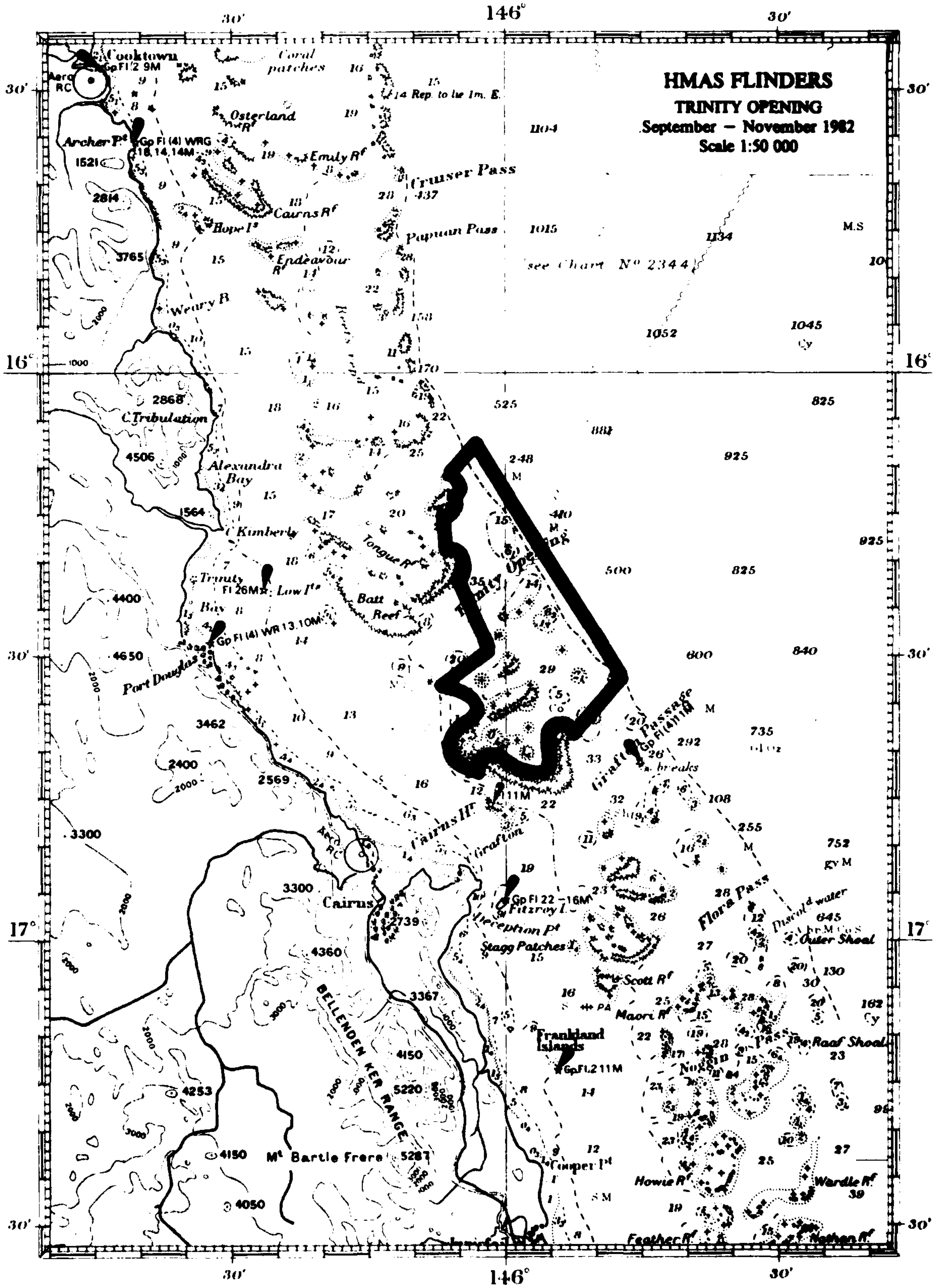
SHIP	DEPLOYED	ACCEPTED	SUCCESS%
ADELAIDE	564	470	83
BRISBANE	224	156	70
CANBERRA	579	439	76
COOK	34	28	83
HOBART	286	214	75
KIMBLA	104	80	77
MORESBY	103	67	65
PARRAMATTA	373	292	78
PERTH	668	518	78
SUPPLY	64	39	72
SWAN	364	262	61
TORRENS	885	402	45
VAMPIRE	85	74	87
YARRA	445	294	66
MISCELLANEOUS	134	113	84
TOTAL	4912	3448	70

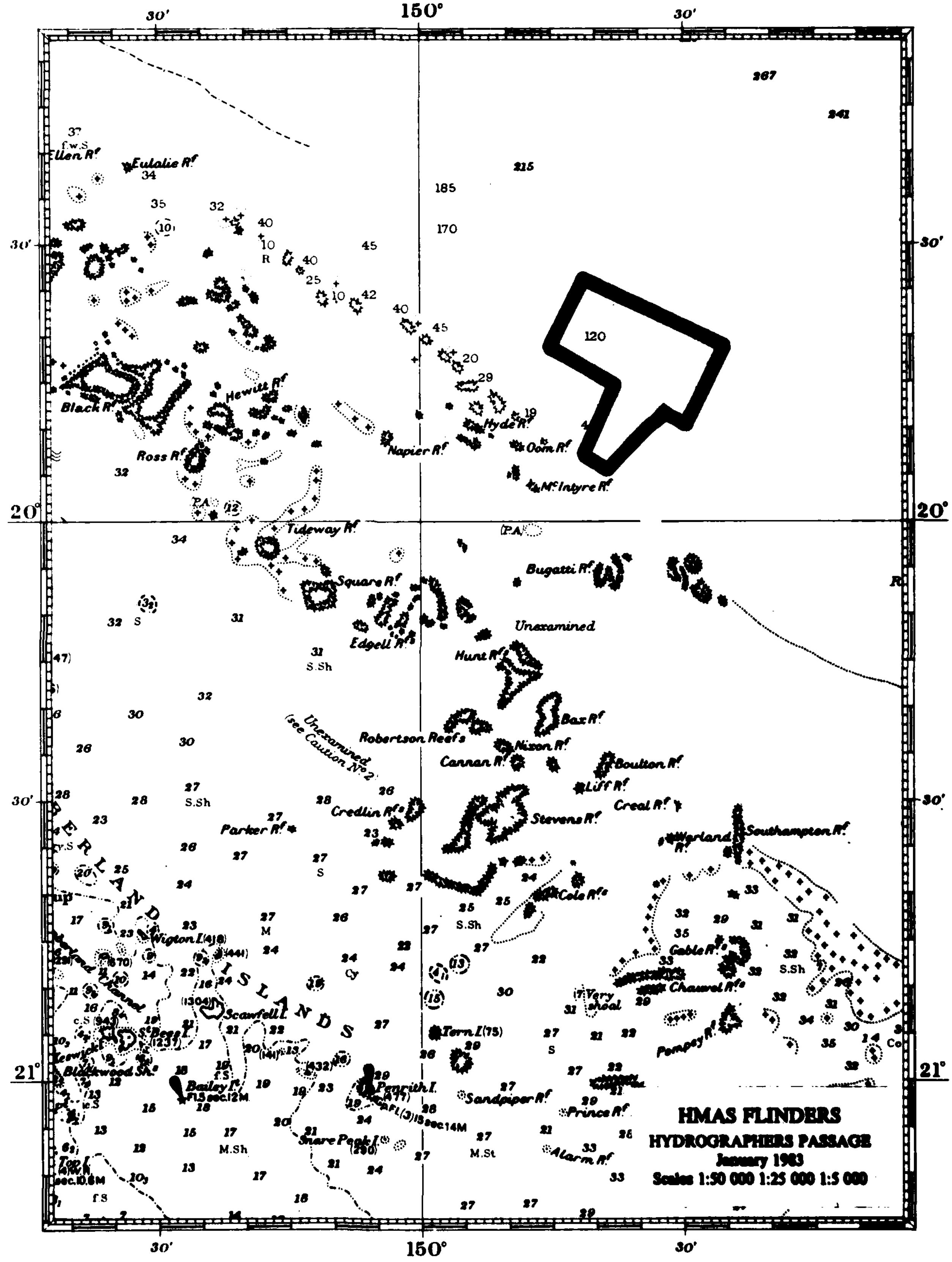

AUSTRALIA
AREAS SURVEYED BY THE R.A.N
SINCE 1945
ADEQUATELY SURVEYED
TEMPORARILY SURVEYED
NO MODERN SURVEYS


HMAS MORESBY
DONGARA TO CAPE LESCHENAULT
September – November 1982 and May 1983
Scales 1:100,000, 1:50 000
HMAS MORESBY
LANCELIN RANGE
May 1983
Scale 1:25 000
30°
30'
114°E
30'
115°E
Green
North
Thirsty Point
31°

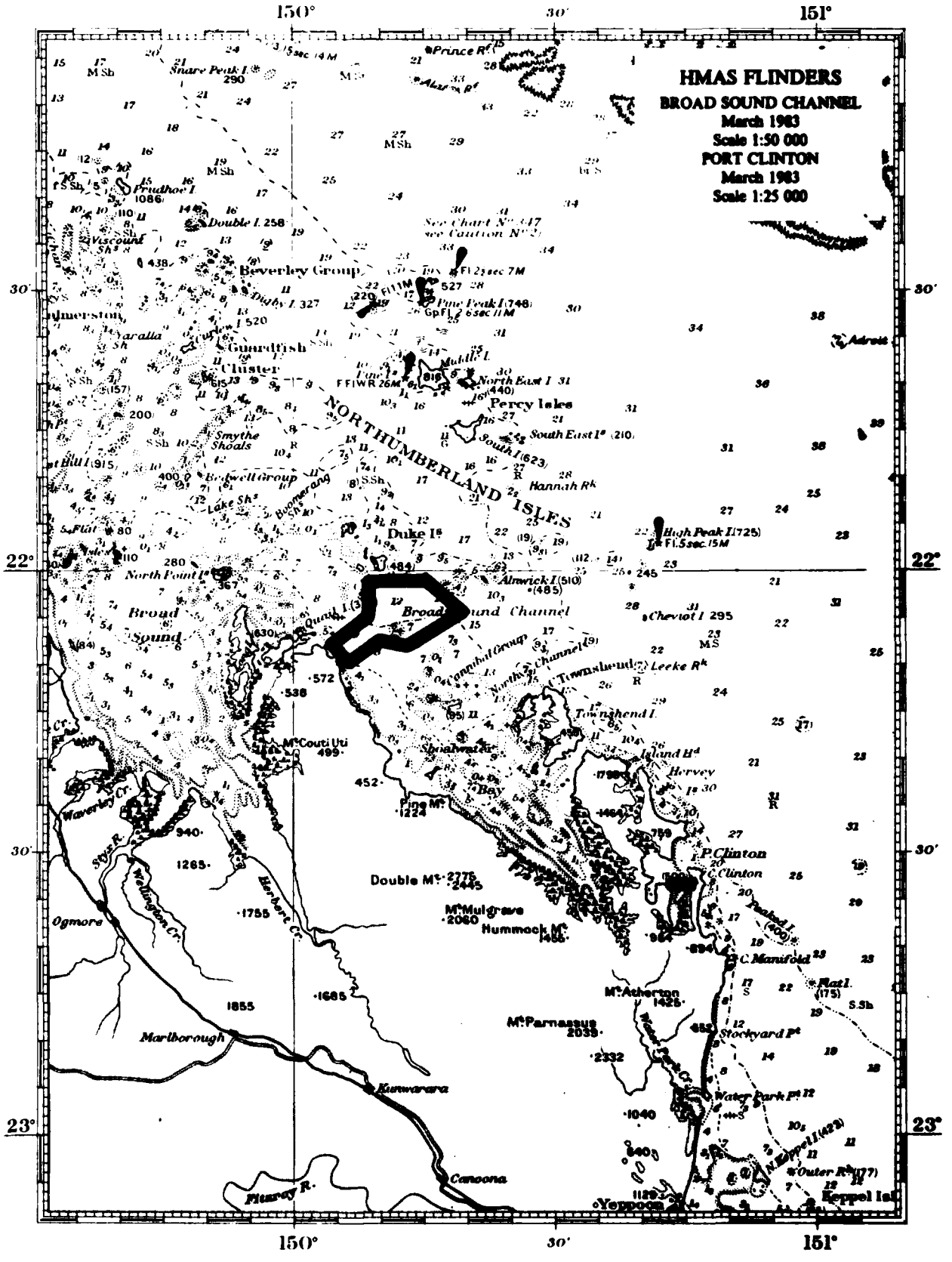

122
50'
10'
20'
30'
40'
The Causeway
Foul Ground
Dangerous to Navigation
See Chart A35 (13)
See Chart 3189
See Chart 3259
Magnetic disturbance amongst the isl
not sounded should n
Port
Wilson I
Hood I
Round I
Mondrain I
Dampier R.
Dabrymple R.
La Perouse R.
Twin R.
Termination I.
Little I.
Rock
Pearson I.
Ferguson R.
Dicken R.
Escape R.
Beaumont I
Sulphur
Appears
always breaks
breakers
HMAS MORESBY
APPROACHES TO ESPERANCE
January – February 1983
Scales 1:50 000 1:100 000

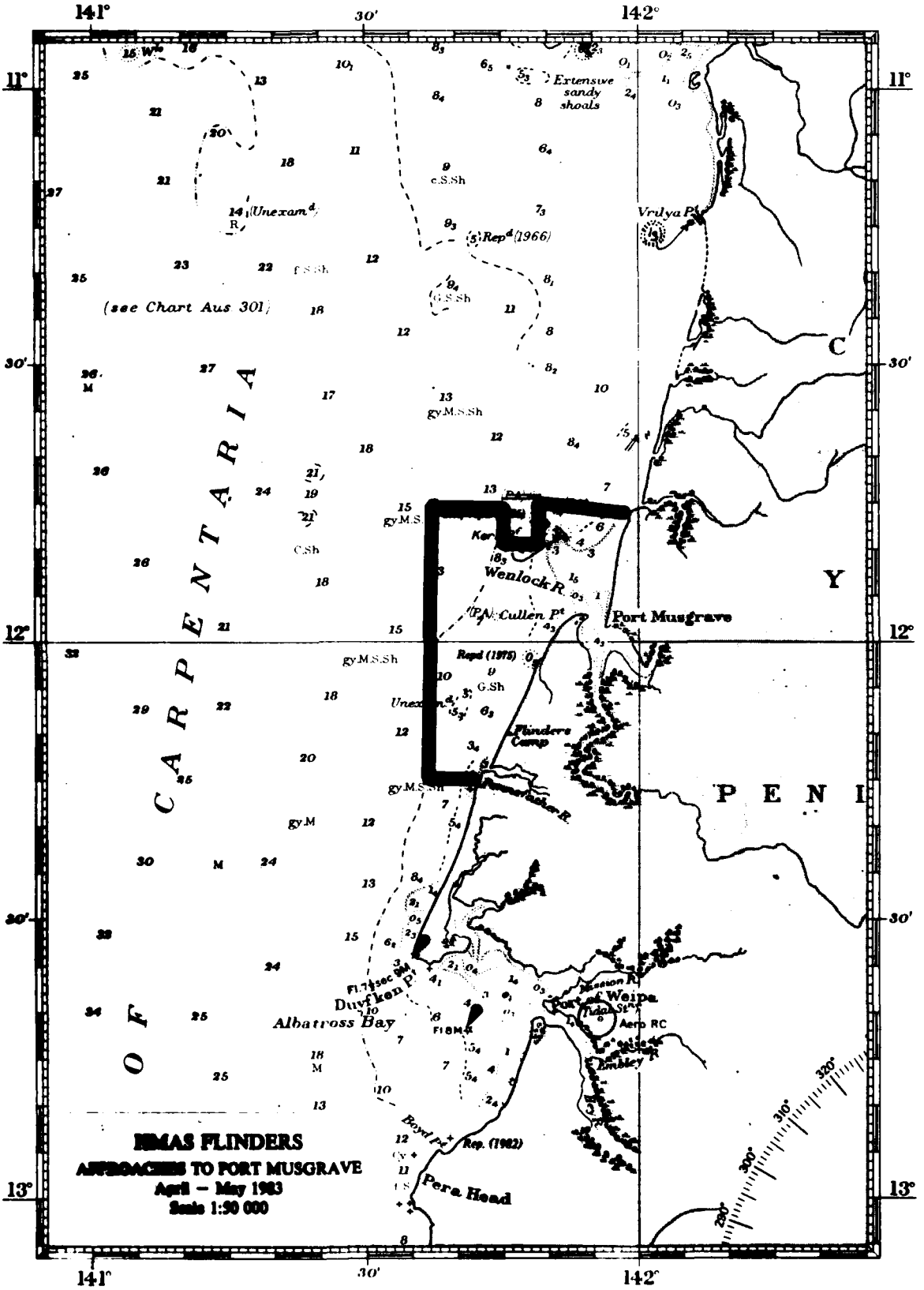

45'
50'
55'
97°
N. Keeling I.
(see Plan)
557
509
944
194
563
592
265
220
1200
1300
1450
1586
204
403
525
12°
50'
55'
5'
10'
15'
640
S
440
442
640
250
263
400
Horsburgh I.
Direction I.
580
CoS
Prison I.
Home I.
555
490
Western Entrance
850
1100
SOUTH KEELING
(see Plan)
180
Sand and coral
West I.
South I.
205
270
HMAS MORESBY
COCOS ISLANDS
June – July 1983
Various Scales

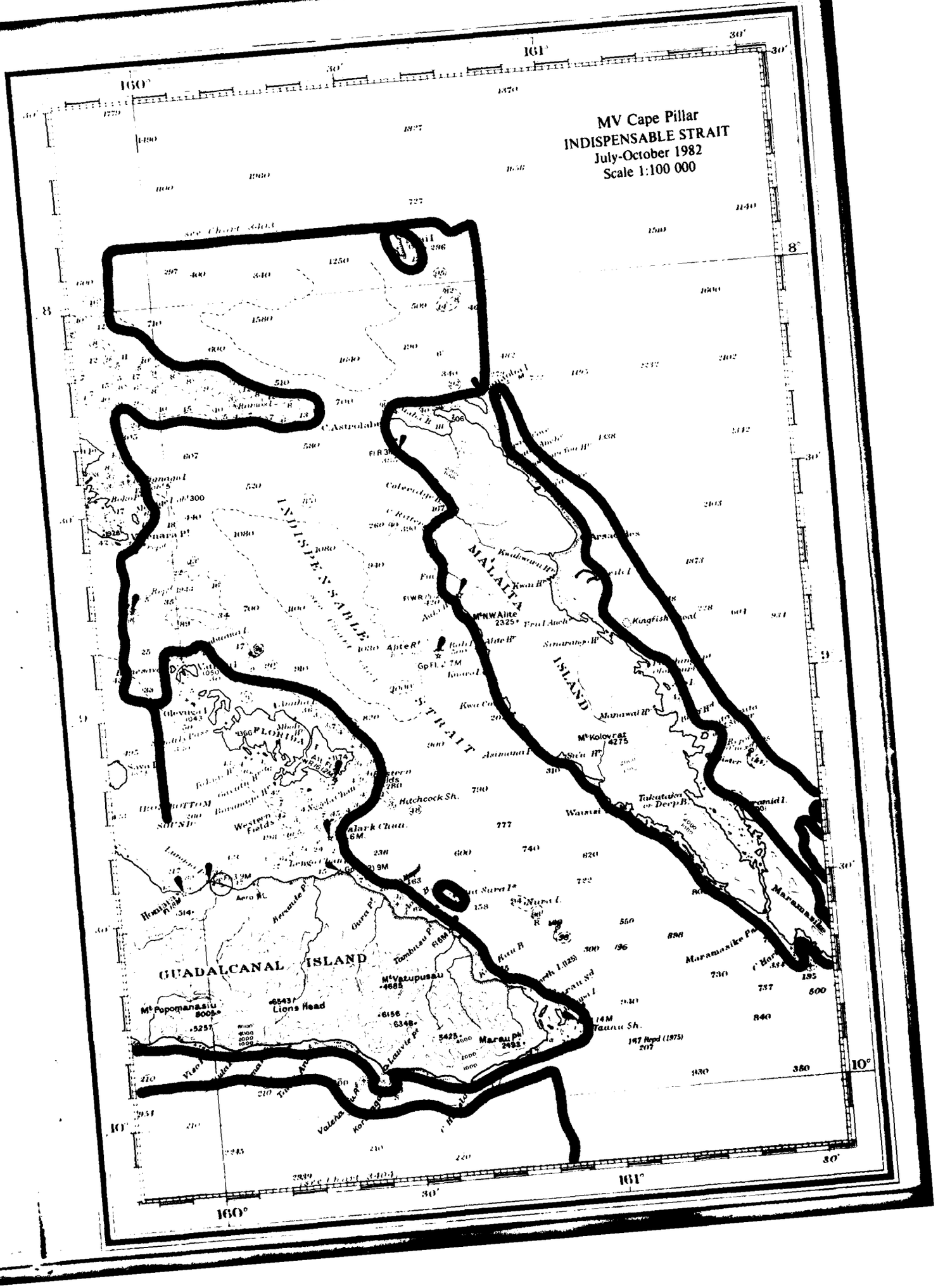

HMAS FLINDERS
TRINITY OPENING
September – November 1982
Scale 1:50 000
146°
30'
16°
17°
Cooktown
Archer Pt
Osterland Rf
Emily Rf
Cairns Rf
Hope Is
Endeavour Rf
Cruiser Pass
Papuan Pass
Weary B
C Tribulation
Alexandra Bay
C Kimberley
Tongue Rf
Batt Reef
Trinity Opening
Low Is
Trinity Bay
Port Douglas
Grafton Passage
Cairns
Fitzroy I
Deception Pt
Stagg Patches
Scott Rf
Maori Rf
Flora Pass
Outer Shoal
Frankland Islands
BELLENDEN KER RANGE
Mt Bartle Frere
Cooper Pt
Howie Rf
Wardle Rf
Feather Rf
Nathan Rf
Ruaf Shoal



HMAS FLINDERS
HYDROGRAPHERS PASSAGE
January 1983
Scales 1:50 000 1:25 000 1:5 000
150°
30'
20°
21°
Eulalie Rf
Black Rf
Hewitt Rf
Ross Rf
Napier Rf
Hyde Rf
Oom Rf
Mc Intyre Rf
Tideway Rf
Bugatti Rf
Square Rf
Edgell Rf
Unexamined
Hunt Rf
Robertson Reefs
Bax Rf
Nixon Rf
Cannan Rf
Boulton Rf
Liff Rf
Creal Rf
Unexamined (see Caution No 2)
Credlin Rfs
Parker Rf
Stevens Rf
Warland Rf
Southampton Rf
Cole Rfs
Gable Rf
Chauvel Rfs
Pompey Rf
Wigton I.
Scawfell I.
Tern I. (75)
Penrith I.
Sandpiper Rf
Prince Rf
Alarm Rf
Bailey I.
Snare Peak I.
Blackwood Sh.
ISLANDS


HMAS FLINDERS
BROAD SOUND CHANNEL
March 1983
Scale 1:50 000
PORT CLINTON
March 1983
Scale 1:25 000
150°
30'
151°
22°
23°
NORTHUMBERLAND ISLES
Broad Sound
Broad Sound Channel
Percy Isles
Beverley Group
Duke I.
Double Mt
Marlborough
Ogmore
Canoona
Yeppoon
P. Clinton
Keppel Is


141°
30'
142°
11°
12°
13°
Extensive sandy shoals
Vrulya Pt
Rep^d (1966)
(Unexam^d)
(see Chart Aus 301)
Wenlock R.
(P.A.) Cullen Pt
Port Musgrave
Flinders Camp
Albatross Bay
Duyfken Pt
Fl 7½ sec
Port of Weipa
Aero RC
Pera Head
Rep (1982)
OF CARPENTARIA
PENI
C
Y
HMAS FLINDERS
APPROACHES TO PORT MUSGRAVE
April – May 1983
Scale 1:90 000


MV Cape Pillar
INDISPENSABLE STRAIT
July-October 1982
Scale 1:100 000
INDISPENSABLE STRAIT
MALAITA ISLAND
GUADALCANAL ISLAND
Mt Popomanaasiu
Lions Head
Mt Vatupussau
Mt Kolovrat
Mt NW Alite
Hutchcock Sh.
Taunu Sh.
160°
161°
8°
9°
10°

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