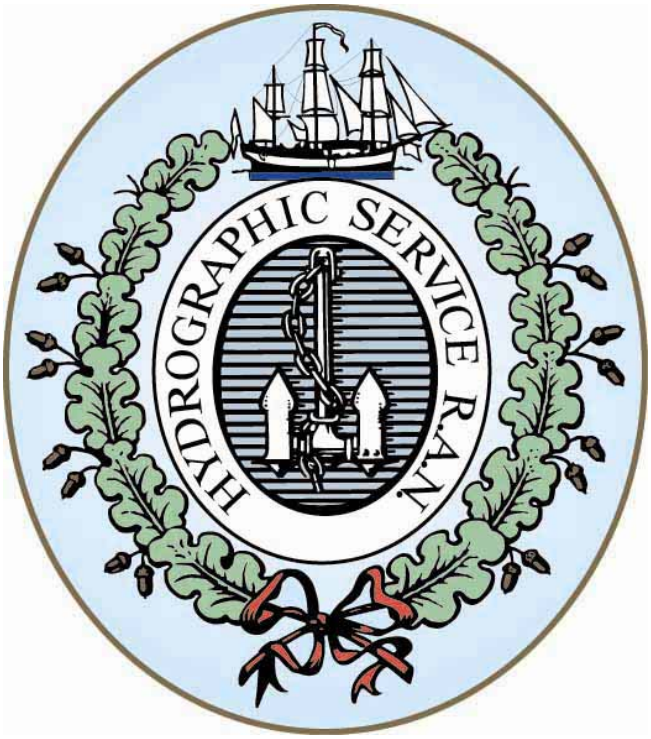
IHO

SOUTH WEST PACIFIC HYDROGRAPHIC COMMISSION (SWPHC)

8th Meeting – Papeete, Tahiti, 19-20 September 2007

SWPHC8-04A



Australian Hydrographic Service
National Report

8th SOUTH WEST PACIFIC HYDROGRAPHIC COMMISSION (SWPHC) MEETING
Papeete, Tahiti – 19-20 September 2007

AUSTRALIAN REPORT

1. GENERAL

In August 2005 the Australian Hydrographic Office (AHO) achieved certification to ISO 9001 : 2000 (Quality Management System requirement) via SAI Global for the production and distribution of its nautical products. The Quality Management System has been extended to incorporate the collection of data and it is intended to seek certification for the whole system in 2008.

The Australian government recognition of the need to accelerate the production of ENC coverage allocated additional funding to the Australian Hydrographic Service over the period 2006-2010. In association with this a review of the AHO staffing levels in 2006 has resulted in an increase of 30 positions primarily in data assessment and chart production sections. The combined result of these initiatives will see Australia achieve complete ENC coverage of the Australian Charting Area by 2010, utilizing a combination of in-house and outsourced production.

2. SURVEYS

2.1 Coverage of New Surveys

Since the previous Commission meeting in November 2005, the Australian Hydrographic Service (AHS) has maintained its survey effort in the northern sector of its charting responsibility. Primarily, the Hydrographic Ships (HS) and Survey Motor Launches (SML) have conducted surveys in Arnhem Land, Torres Strait, Melville Island, Bonaparte Archipelago and the Inner Great Barrier Reef, as far south as Gladstone and Hervey Bay. Also, HS and SMLs conducted survey work in PNG, from November 2006 to March 2007, in support of the PNG Charting Redevelopment Project. The LADS Flight continued to maintain a high rate of effort with concurrent survey work occurring in several areas along the Inner Great Barrier Reef. During 2006 the LADS Flight deployed to Rockhampton for 8 weeks in support of a survey task at Swain Reefs. In March 2006, the Deployable Geospatial Support Team (DGST) provided significant rapid environmental assessment and improvements to charting during the Australian Government's assistance to East Timor. DGST has also completed surveys in Torres Strait and the approaches to Cairns. More recently, a second DGST has been formed from RAN Reserve personnel, which adds to the AHS capability on an adhoc basis. This was demonstrated in a recent survey conducted at Great Keppel Island.

In January 2006 the Australian Government identified a requirement to immediately improve charting in Torres Strait to enable greater border and resources protection in the region. With additional funding from the Australian Government, the AHS established the Fisheries Protection Surveying and Charting Project with the intention to bring charting across the entire area up to international standards before 2010. In order to meet this challenge, the AHS out-sourced survey work via tender. The in-field component of Phase 1 of this project was conducted from October 2006 to March 2007 with data being compiled and presented to the AHS by December 2007. Phase 2 of this project is currently being tendered with the remaining areas of Torres Strait to be completed by mid-2009. HS and SMLs will continue to work in the Torres Strait region in order to meet this obligation.

Hydroscheme, the Australian Hydrographic Service's 3 year rolling program of surveying and charting activities provides guidance on ongoing and new surveys to be conducted. The current version of Hydroscheme 2006-2009 was issued in Mar 07 and is available to the public via www.hydro.gov.au. The next edition, Hydroscheme 2007-2010 is expected to be distributed in September 2007.

2.2 New Technologies and/or Equipment

In order to achieve improved accuracy in survey data the HS platforms have recently had Brooke Ocean Technology Moving Vessel Profilers fitted. This has enabled continuous sound velocity profiling, which has provided improvements to data accuracy. More recently, the HS platforms have implemented CARIS HIPS/SIPS post-processing software. This package has increased the performance of the survey system and enabled a more flexible processing workflow. In order to upgrade the capability requirements of the Hydrographic Survey Force other technology purchases have included magnetometers, portable C-Max Side Scan Sonars and Leica GPS Enabled Total Stations; which have replaced the aging Theodolite and Level.

A contract has been let to upgrade the SMLs hydrographic survey suite, to incorporate multibeam echosounder technology. The SML Upgrade will enhance the survey rate of effort as well as overall platform capability. Given the revised contractual requirements the first SML upgrade is expected to commence in October 2008. Similarly, the LADS sensor will be upgraded in January 2008 and future aircraft replacement is under consideration.

2.3 New Ships

No new ships or survey-related small boats have been introduced into the AHS.

2.4 Problems Encountered

No significant problems were encountered with the survey equipment.

3 NEW CHARTS & UPDATES

3.1 Charts & ENCs

3.1.1 National Charting Scheme

Hydroscheme is the three year rolling Surveying and Nautical Chart Production Plan. The latest version, 2006-2009 has been released and is available from the AHO website www.hydro.gov.au. It provides details on our upcoming programme.

Seventy nine New Charts and New Editions of the national paper and raster chart series were produced from July 2005 to June 2007. Several of these have been limited New Editions to depict the Great Barrier Reef Marine Park and various jurisdictional boundaries in Queensland. To be consistent with the IHO, the AHO is also replacing 1:1 million scale charts with 1:1.5 million scale charts.

In addition to the paper charts, 189 New and revised Electronic Navigational Chart (ENC) Cells have been produced and released in an encrypted format. All Australian ENCs are being distributed via the IC-ENC network, with limited direct distribution to selected maritime agencies. The current focus is to achieve full ENC coverage in 2010.

3.1.2 International (INT) Charting Scheme

The progress on the INT Charting Scheme for Region "L" is as follows:

Small Scale (1:3 500 000 & 1:10 000 000)
No new work on this series since the last meeting

Medium Scale (1:1 500 000)
New Editions of INT Charts 620, 621 and 720 were published in 2006.

Large Scale
None planned at this stage.

3.1.3 Challenges Ahead

The implementation of the Digital Hydrographic Database (DHDB) is revolutionising the way we store and manage data with the creation of a seamless sounding database. The emphasis on loading the database is taking its toll on the output of new and revised charting products. This should be a medium term impact as once the database is populated chart and ENC production should be much more streamlined. During this loading phase we are experiencing training shortfalls in reskilling traditionally paper chart compilers into ENC compilers.

The Asian Development Bank funded project to modernise the Papua New Guinea series charts and provide ENC coverage is due for completion in February 2008.

Growing pressure to extend our ENC coverage has refocussed the organisation into ENC maximisation at the expense of updating paper charts. Additional funding is being provided to accelerate ENC production to full coverage in 3 years. Part of this component is the creation of new cartographic positions which we are currently recruiting to fill. These new staff will require extensive training before a marked increase in production is realised.

The production plan is a combination of New Chart compilations and chart conversions utilising both in-house and contracted services. The result will provide full Metric Charts on WGS84 / LAT datum in paper, raster and ENC for the Australian Charting Area.

4. NEW PUBLICATIONS & UPDATES

4.1 Australian National Tide Tables (ANTT)

For details see: http://www.hydro.gov.au/prodserv/antt.htm

4.2 Seafarer Tides

For details see: http://www.hydro.gov.au/seafarer/tides/tides.htm

4.3 Australian Seafarers Handbook

The AHO published the Australian Seafarers Handbook in December 2004. The handbook is available in the current edition corrected for notice to mariners. Edition 2 is presently in compilation and due for publication in August 2008.

For details of the publication see: http://www.hydro.gov.au/prodserv/ash.htm

4.4 Maritime Gazetteer of Australia

The AHO maintains the Maritime Gazetteer of Australia as a web product. The gazetteer is a listing of all names shown on Australian navigational chart products. The resulting search provides the lat and long of the place, its feature code and the Australian navigational charts on which the place is depicted.

For details see: http://www.hydro.gov.au/tools/mga/mga.htm

4.5 Australian Chart and Publication Maintenance Handbook

The AHO is currently compiling this NP to describe the process for the upkeep of Australian digital and paper navigational products. It is due for publication in 2008.

4.6 Australia Pilot Volume II (NP 14)

Under the United Kingdom Hydrographic Office / Australian Hydrographic Office Sailing Directions Cooperation Project revision of the UKHO Admiralty Sailing Directions - Australia Pilot Volume II (NP14) has been completed by the AHO with final editing support from the UKHO Senior Editor on detachment to the AHO in Jul/Aug 2007. The Publications will be published by the UKHO under dual UKHO and AHO badging in November 2007. NP 13 is currently under review with planned publication in November 2009.

5. MSI

Australia is the NAVAREA X coordinator and detailed information in respect of MSI broadcasts can be found in the Admiralty List of Radio Signals (ALRS) Vol 5, 2007/08 edition and the Annual Australian Notices to Mariners, 2007 edition. The scheduled MSI broadcasts are at 0700 UTC and 1900 UTC and promulgated by both the IOR and POR satellites.

5.1 Navtex Coverage

Australia does not broadcast coastal warnings via Navtex. The maritime areas around Australia have been designated GMDSS Sea Area A3. Coastal and local warnings are broadcast using SafetyNET to take advantage of the Navtex emulation capability of the Inmarsat-C MES. The pseudo Navtex areas are provided in Figure 1 below.

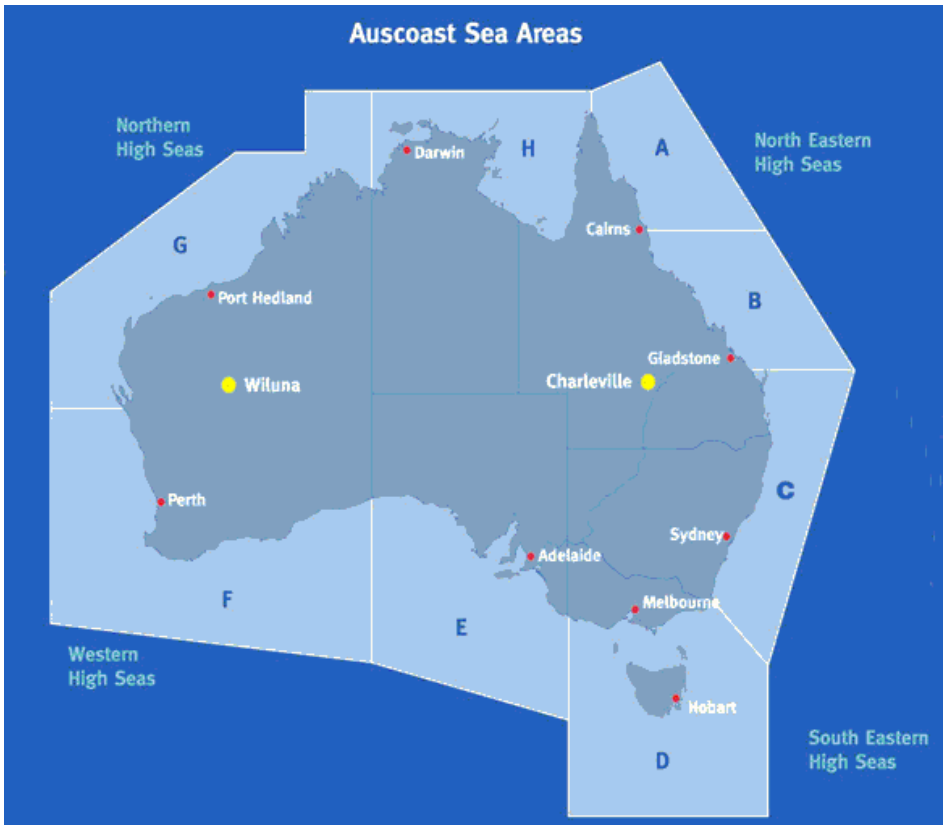


Figure 1: Australian Coastal areas – NAVTEX B1 code

5.2 NAVAREA Website

In addition to the normal SafetyNET broadcasts, navigational warnings are also available at the following web site:
http://www.amsa.gov.au/search_and_rescue/distress_and_safety_communications/MSI/AUSMSI.htm

The web site is updated in almost real time, that is, within 30 minutes of issuing a new warning or the cancellation of a current warning.

5.3 Shipping Traffic Around Australia

Figure 2 provides an indication of the density of shipping traffic around the Australian coast and within its search and rescue region which extends from 075 East to 163 East longitude. The figure indicates the high volume of traffic from the west coast via the Sunda and Lombok Straits and from the east coast via the east off Papua New Guinea to/from Japan, China, etc. Furthermore it does indicate that there is relatively high traffic throughout NAVAREA X except for the area south of Tasmania. The data has been taken from ships reporting to the Australian Ship Reporting system during 2006.

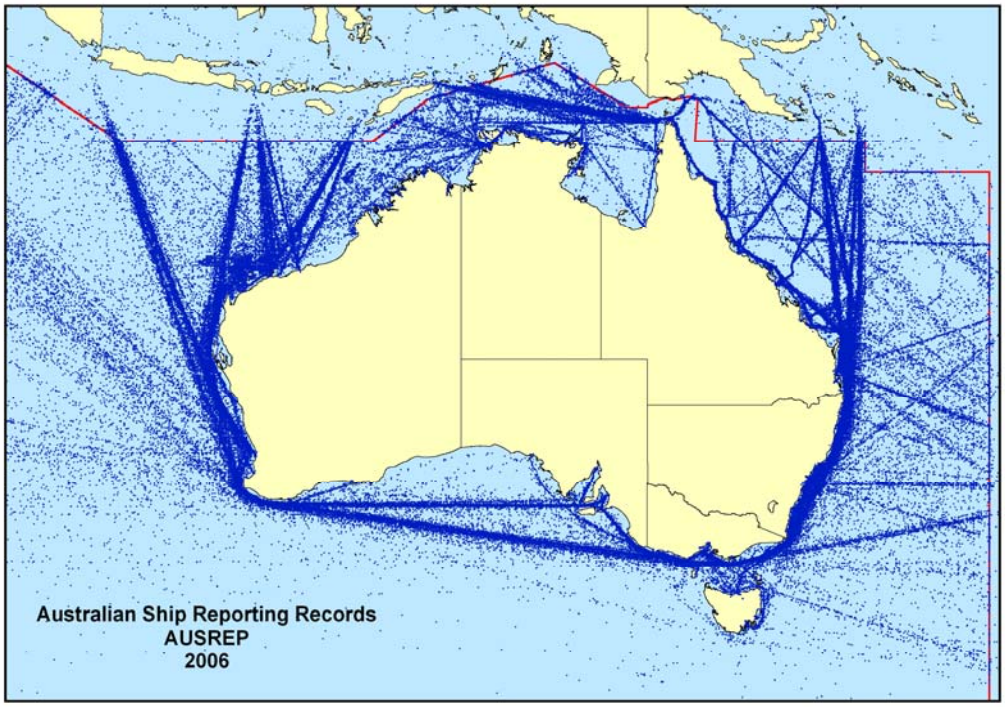


Figure 2: Shipping Traffic Around Australia - 2006

6. S-55 UPDATE

The latest information for Australia has been forwarded to the IHB.

7. CAPACITY BUILDING

7.1 RAN Hydrographic School

7.1.1 The RAN Hydrographic School continues to provide training courses in hydrographic surveying for officers and sailors from Australia and the local region. The H2 course was reaccredited

in 2002, as a Category B course by the FIG/IHO International Advisory Board on Standards of Competence for Hydrographic Surveyors in 'Nautical Charting' and 'Military Hydrography'. The IHO Cat B program course comprises a 26 week period of instruction at the RAN Hydrographic School in Sydney after which students must undertake a 2 year period of practical surveying and complete a competency training log prior to the award of their certificate of recognition.

7.1.2 During the period 2005 to 2007 a total of 39 students have completed the three H2 courses. This has included 25 students from the Royal Australian Navy, 7 from New Zealand, 2 from Vietnam, 2 from the Philippines, 2 from Indonesia, 1 from Malaysia and 1 from Papua New Guinea. Additionally, in 2005 a further 6 Australian students completed a Bridging Course designed to align their previous training with the IHO CAT B syllabus allowing them to receive international accreditation. This program of realignment training has now been completed.

7.2 Training of PNG personnel

7.2.1 The AHO has been assisting in the revitalisation and subsequent support of the revised hydrographic arrangements in Papua New Guinea (PNG) under the newly established PNG National Maritime Safety Authority (NMSA). Mr Joseph Kunda (Manager, Hydrographic Services) is currently attending the H2 Course at the RAN Hydrographic School (May-Oct 2007). The Charting Officer, Ms Rhonda Amos, undertook a 1 week training programme at the AHO from 30 April to 4 May 2008 to build upon her existing cartographic skills. The major focus of the training was the maintenance of charts and publications, with a secondary focus on distribution.

7.2.2 Officers from the Emergency Response business unit of the Australian Maritime safety Authority visited Port Moresby, PNG in August 2007 to establish first hand the SAR and MSI needs of PNG. On completion of the report of the visiting officers a SAR/MSI workshop will be tailored to meet the needs of PNG.

8. OCEANOGRAPHIC SERVICES

8.1 Tide Gauge Networks

8.1.1 Two permanent Tide gauge networks are operated in the region by the National Tidal Centre (NTC) of the Bureau of Meteorology (formerly the National Tidal Facility at Flinders University). They are:

8.1.1.1 The Australian Baseline Sea Level Monitoring Project which currently consists of 16 permanent Gauges around the Australian Coastline, including 1 at Cocos Island. Locations of the Gauges are shown in Figure A (below).

Monthly reports are published by the NTC and can be located on their website at:
www.bom.gov.au/oceanography/projects/abslmp/reports.shtml

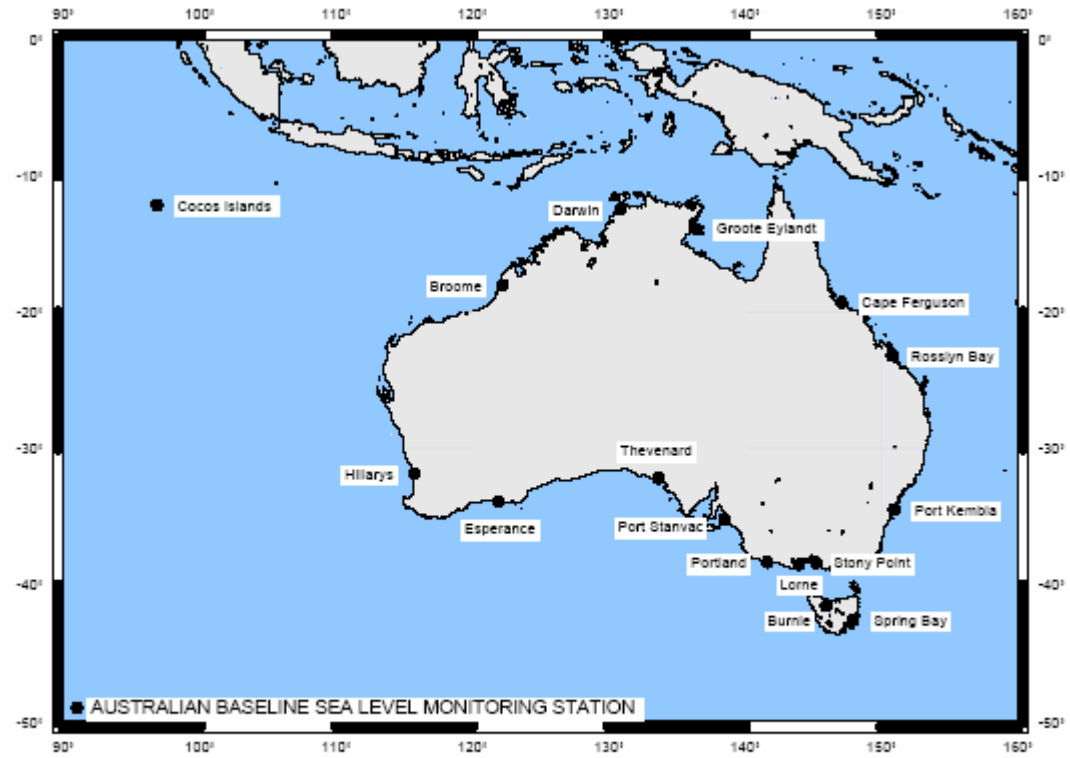


Figure A: Australian Baseline Sea Level Monitoring Project sites.

8.1.1.2 The South Pacific Sea Level and Climate Monitoring Project which currently consists of 12 permanent Gauges throughout the South Pacific region monitoring sea level and related parameters. Eleven of these were commissioned between 1992 and 1994, and a station at Pohnpei FSM was completed in 2001.

Locations of the Gauges are shown in Figure B (below).

Monthly reports are published by the NTC and can be located on their website at: www.bom.gov.au/oceanography/projects/spslcmp/spslcmp_reports.shtml

Gauge Locations

- Cook Islands
- Fiji
- Federated States of Micronesia
- Kiribati
- Marshall Islands
- Nauru
- Papua New Guinea
- Solomon Islands
- Samoa
- Tonga
- Tuvalu
- Vanuatu

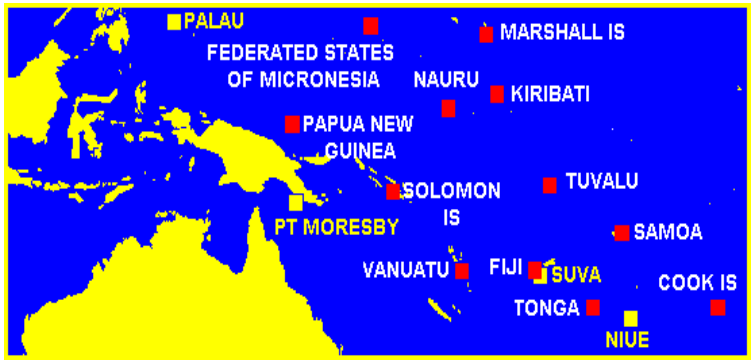


Figure B: South Pacific Sea Level and Climate Monitoring Project Sites.

8.1.2 Since 1994 the gauges in both arrays have been able to be accessed in real time for tsunami monitoring purposes. Since the December 2004 Sumatran event however, all but three have been equipped with more reliable communications links that transmit the data every minute via satellite and made available via the Global Telecommunication System (GTS) every three minutes. Further efforts will be made in the coming year to install about thirty more stations with an emphasis on tsunami monitoring and real time data transmissions to be made available globally. Local and regional capacity

will be enhanced in the countries of the region to capture the data and develop emergency response strategies in the event of a tsunami.

All of the existing and many of the new stations will also capture weather information and contribute to the global models to provide enhanced information for forecasts in the region.

8.1.3 An array of 5 Permanent Data transmitting Tide Gauges and 1 Transmitting Tidal Stream gauge is operated by the Australian Maritime Safety Authority, located in the Torres Strait between Australia and New Guinea. The Tide Gauges are located at Booby Island, Goods Island, Turtle Head, Nardana Patches and Ince Point. The Tidal Stream Gauge is located at Nardana Patches. Further information is available on page 258 of the Australian National Tide Tables, 2007 edition.

8.1.4 Several State departments and individual Port Authorities also operate approximately 50 permanent gauges throughout Australia, and details are contained in the Australian National Tide Tables.

8.1.5 The Australian Hydrographic Service (AHS) operates Tide gauges in support of survey operations, but has no permanent gauge locations.

8.2 New Equipment

The AHS continues to use Inter-Ocean S4 Tide gauges and has not obtained new gauges for some time. Inter-Ocean S4 Current meters and RD Instruments Workhorses ADCPs continue to be used and no new current gauges obtained.

8.3 Problems Encountered

Problems have still been encountered with the RD Instruments Workhorse ADCPs, in respect to successfully recovery with the acoustic releases due to bio-fouling. Secondary recovery methods are currently being used to ensure successfully recovery until bio-fouling issue can be resolved.

9. CONCLUSION

The past 2 years have been both exciting and challenging with increased Government funding linked to greater demands from and scrutiny of AHS activities.

Whilst approval has been obtained for staff increases, recruiting has proven difficult with few nautical cartographers and hydrographic specialists available. This has increased training overheads and impacted on productivity. At the same time a number of senior staff have reached retirement with a combined 200 years of experience leaving the AHS in the past 12 months.