

# Royal Australian Survey Corps Association



## ACT Newsletter

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## Issue Note

*By Rob McHenry*

Peter Demaine collared me at the Canberra Corps birthday luncheon at the Kingston Hotel and handed me a paper he wrote in 1995 when he was OC of 4 Fd Svy Sqn. The paper is broadly in three parts; a short blurb on the traditional role of field survey, a short 4 Sqn brief and a chronological listing of 4 Fd Svy Sqn field operations and tasking from 1946 to 1995. I found the listing fascinating as I served in 4 Sqn for about 5 years (1974 to 78 - SGT to SSGT) and was involved in a number of the ops. I have fond memories of Adelaide and the many people I served with there including (to name a few) George Gruszka, Stevo Hinic, Billy Griggs, Phil Meagher, Bob Langley, John Harrison, Bob Dickenberg and John Hunter - the only bloke with hair longer than mine (apologies to the many I have not listed).

Anyway, despite my complaining that the document was in hard copy and needed OCR conversion - not to mention a lack of pictures, I gave in to all sorts of dire threats from Peter if I didn't publish it (I think he was tired of carrying it around) and it now forms the bulk of this newsletter. For interest, I have added a couple of my pictures from Op SHORTWALK

somewhere north west of Woomera in 1975 and also Op Hot Land where we had our Derby base.

I should add that I have altered Peter's paper to newsletter and digital format so any errors created as a result are mine.

## A Bit More Pension Hot Air

Received another media release regarding military pensions from the Shadow Minister for Defence Science, Technology and Personnel, Mr Stuart Robert MP, and the Shadow Minister for Veterans' Affairs and Shadow Minister Assisting the Leader of the Opposition on the Centenary of ANZAC, Senator the Hon. Michael Ronaldson.

Bottom line is that there is some concern that veterans superannuation pensions increased by 0.1 per cent, despite aged and service pensions increasing by 0.9 per cent on 20 March. Amidst a bunch of further hot air, the press release advised that if elected, the Liberals "will provide fair, just and equitable indexation of military superannuation pensions."

I am reminded of other promises made by all sorts and flavours of political types when in opposition such as "We'll stop the boats." Let's hope this one holds more water.....

## Traditional Role of Field Survey

*A paper produced by Peter Demaine in 1995 when he was OC 4 Fd Svy Sqn*

### ACKNOWLEDGEMENTS

I would like to thank all those who have taken time to record the history of field survey in Operation Reports, Registers of Field Books, articles to the National Bulletin of Survey Corps Associations, PARARE magazine, a book titled "The Topographical Map Series of Australia" author B.T. Tyson dated 15 Oct 65, and LTCOL Clem Sargent's article in The Australian Surveyor of Dec 94 titled "The Royal Australian Survey Corps, 1915 to 1990".

I would also like to thank SGT Marty Evans for finding some reference material, researching the history and proof reading this paper.

### INTRODUCTION

LTCOL L.A. Newton, S01 Svy LHQ tasked me to write about the history of 4th Field Survey Squadron for PARARE magazine. This paper is aimed at chronicling the traditional role of field survey.

### HISTORY

#### The Birth of Field Survey

The traditional role of field survey can be traced back to the earliest days of colonisation. Prior to the formation of the Commonwealth, each State followed its own path in exploration and mapping, often led by military personnel. Maps were produced mainly for

recording property boundaries and partially for communication. The resulting "Parish Maps" were basically cadastral, showing little topographical information and no formal connection with triangulation surveys.

The advent of long range artillery, with explosive projectiles in the nineteenth century emphasised the need for military maps. The requirement for strategic intelligence in the form of maps and plans was also identified as early as 1907. At this time cadastral maps were used as a base and topographic detail was added. Field sheets, used in the production of 1" to 1 mile topographical maps, were drawn on plane tables.

It was soon realised that efficiency and coordination could only come with a formal triangulation system. To that end, the Survey Section, RAE was formed and commenced their own triangulation program in 1914. This was interrupted by the outbreak of World War One and the Survey Section became the Australian Survey Corps on the 1st July 1915. The outbreak of war did not, at first, seriously affect the work of the members of the Section as an embargo was placed on their enlistment in the AIF. After the embargo was lifted in 1917, members of the Corps enlisted in the AIF and went on to serve in France, Sinai and Palestine. After the War, the Corps reverted to Survey Section, RAE until 1932 when the Australian Survey Corps was reformed. Triangulation was recommenced and linked SA, VIC, NSW and QLD. The Corps produced four maps per year until 1939.

The 1930s saw a dramatic change in mapping with the introduction of Aerial Photography in 1930. Photogrammetry first supplemented and then quickly replaced Plane Tabling. In 1936, the first map in Australia compiled entirely from Aerial Photography was SALE, Victoria at a scale of 1" to 1 mile. This map was produced by plotting from strips of overlapping aerial photographs.

The map production process was now separated into phases:

- Acquiring Aerial Photography,
- Acquiring control for the block of Aerial Photography
- Transferring control to individual photos,
- Plotting from the photos,
- Collating the plots onto field sheets,
- Checking the compilations in the field, and
- Printing the map from the field sheets.

### Mapping in Australia during World War Two

World War Two found the national map effort still fragmented and without adequate map coverage even of operational areas. It also brought about a huge increase in demand for maps, and consequently intensified geodetic and topographic survey activity. An Emergency Mapping Scheme was instituted for the production of 1" to 1 mile, 4 mile and 8 mile scale maps and photomaps. The focus of this Scheme was the strategically important areas, particularly in northern Australia. All available material was utilised in the rapid compilation of the topographical maps, which were not necessarily the result of precise surveys. A 1:25 000 "artillery map" series was commenced in 1941 for Army training and key point defence requirements.

## Post World War Two

After World War Two, the Survey Corps continued triangulation and the production of 1:25 000 "artillery map" and 1" to 1 and 4 mile series mapping. The Corps also undertook several projects which were beyond the capability of any other department. In Queensland triangulation for mapping was carried out in the Burdekin Basin to assist the Queensland State Government water conservation and closer settlement projects.

In 1946 the Commonwealth Government offered assistance to the Governments of New South Wales and Victoria to determine the feasibility of diverting the headwaters of the Snowy River into the Murray River. The Army was the only Commonwealth body with the manpower, equipment and organisation capable of undertaking the preliminary investigations. Consequently, the Survey Corps undertook two initial surveys. The first at Khancoban to survey a proposed tunnel outlet and the second to establish levels on the Snowy watershed. The surveys were completed in 1948. The Kosciusko and Berridale 1" to 1 mile map sheets were published much later and were soon superseded by maps produced by the Snowy Mountains Authority. No official recognition was ever given of the contribution by the Survey Corps to the development of the Scheme.

From 1946 to 1953 the Corps was involved in the development of mapping and surveys at Woomera, SA to support the Long Range Weapons Research Establishment later known as the Woomera Rocket Range. AHQ Fd Svy Section produced 1" to 4 mile maps covering a large part of the Range. In 1949, a detachment from 5th Field Survey Company was employed to carry out the extension of first order triangulation from Mt Arden and South Tent. This project continued until 1951 terminating at Mt Eba. To control and strengthen the triangulation a base line was established 8 miles west of Lake Koolymilka, in the Range area. The base line, a little over 7 miles in length, lay between Knoll and Boundary trigs. Astro observations for latitude, longitude and azimuth were carried out at Knoll trig.

In 1945 the pre-war Commonwealth Survey Committee called a conference with the Surveyors-General of the States which concluded that "... a National Mapping Council is essential for the co-ordination of the mapping activities of Australia ...". The National Mapping Council held its first meeting at the end of 1945 and was constituted in 1946. In the 1950s the Council evolved and it consisted of the Director of National Mapping (Chairman), the Director of Military Survey - Army, the Commonwealth Surveyor-General, the Hydrographer - Navy, and the Surveyors-General of the States.

## Field Survey in South Australia

From 1915 until 1951 military topographical mapping in SA was conducted by Royal Australian Survey Corps (RASvy) units based outside the state. Mapping and surveys were undertaken for the atomic testing range at Maralinga and the Woomera Rocket Range. In 1947 the Australian Regular Army was formed and the Survey Corps organisation was formalised by the establishment of Command Field Survey Sections in the capital cities of each State, except Tasmania.

In February 1952, Army HQ Field Survey Section (Central Command Detachment) was established in Adelaide at Largs Bay, tasked with providing map coverage in the Woomera and Southern areas of the state. The section subsequently reorganised as Central Command

Field Survey Section, moving firstly to Hampstead Barracks in 1953 and then into accommodation at Keswick Barracks in 1954. In 1957 the Section commenced mapping operations in the NT for the 1:250 000 National Mapping Program and to extend geodetic control across the continent. The Unit was relocated to the old cavalry stables (now the Squadron Q store) in 1961 and was redesignated Central Command Survey Unit. In 1967 the Unit began 1:100 000 mapping for the national mapping program. In 1970 the Unit was redesignated 4th Field Survey Squadron. From 1972 to 1974 inclusive the Unit was engaged in aerodist operations conducted in PNG. The present purpose built accommodation was occupied in 1973. Since 1975 the Unit has been involved in the 1:50 000 mapping program in WA, NT, QLD and SA. From 1984 to 1986 the Unit conducted a Defence Co-operation Program (DCP) control survey and aerial photography in Vanuatu to establish base line points for that country's 200 mile Exclusive Economic Zone.

From 1992 to 1994 the Unit conducted aerial photography acquisition operations, as part of the DCP in PNG, Solomon Islands and Vanuatu. A summary of field survey operations and tasking is contained in Annex A. *(Ed. I have converted the Annex to a separate heading in this newsletter)*

The late 1980s saw enormous changes in the surveying and mapping field in Australia. In 1987 a review of Australian surveying and mapping was conducted by Professor Richardson. This resulted in a major restructure of the National Mapping and Australian Survey Office organisations. These two organisations were amalgamated into the Australian Surveying and Land Information Group. Following this review, in 1988 RASvy underwent an Army review, commenced by Brigadier Baker and completed by Brigadier Byrnes. Changes recommended by this review included a major reorganisation of RASvy . Briefly this involved disbandment of 1, 2 and 5 Fd Svy Sqns, the raising of 1st Topographical Survey Squadron (1 Topo Svy Sqn) and an expansion of 4 Fd Svy Sqn and the Army Survey Regiment (Army Svy Regt). A net establishment decrease of approximately 100 personnel in RASvy resulted.

The Defence Force's "Force Structure Review 1991" has set about to apply the priorities set out in the Government's White Paper, " The Defence of Australia 1987". This review introduced the Commercial Support Program (CSP) which aims at reducing the number of service personnel involved in base support functions by using commercial and civilian support where operationally feasible, practical and cost effective. The non-core mapping, charting and geodetic activities of Army Svy Regt and 4 Fd Svy Sqn were tested under CSP resulting in a decision to award a five year contract for the provision of digital topographic support to the ADF to the Army Topographic Support Establishment.

In a move to ensure Land Command holds sufficient survey resources, 4 Fd Svy Sqn was moved from under command Army Office to under direct command Land Headquarters in August 1993. The CGS has directed that 4 Fd Svy Sqn will disband by 1 May 96, with a corresponding significant increase in the amount of personnel and equipment at 1 Topo Svy Sqn.

#### 4 FD SVY SQN - UNIT BRIEF

##### Role

The role of 4 Fd Svy Sqn is to carry out field survey and aerial photography in Australia's Area of Direct Military Interest, compile maps using photogrammetric methods, cartographically prepare

map manuscripts for printing and to store and distribute maps within Central, Southern and Tasmania regions.

### Facilities

The office functional work areas are operational planning, plotting, compilation, aerial photography, map distribution, administration and logistic support.

### Operations - Office Environment

Operational planning is based on a tasking directive formulated by the ADF Geographic Requirements Committee which outlines mapping work to be completed by financial year. DSvy-A is a member of this Committee. Ops Spt Tp extracts information from the tasking directive to calculate manpower, equipment and financial resources required by the Sqn to achieve each task. In particular, bids for RAAF, RAN and AAAvn are requested through LHQ as early as possible to ensure availability for each task.

Up until 1993 plotting involved the use of manual B8 photogrammetric plotters producing first pencil overlays and then ink compilations. Initially dyelines then later screen printed field check packages were produced from these compilations. From 1993 to 1994 this process was short circuited by having contracted agencies scanning and vectorising pencil plots. The field check package was then produced from the resultant digital data by the Army Svy Regt. The Sqn has since acquired its own digital capability, with four digitally converted 138s with visual superimposition and three graphic edit workstations connected to digitisers. The majority of field check packages are compiled from this digital data at the Army Svy Regt.

Pre and post field check tasks are carried out in the Manual Compilation Section. In the past this area was kept extremely busy all year round with ink compilation, scribing and other manual cartographic tasks. This Section is now only employed on pre and post field completion tasks. The tasks of this Section includes: compiling guides, compiling nomenclature lists, amending field completion master positives and guides, checking joins, applying supplementary photography corrections using the Zoom Transfer Scope, calculating destinations, editing, releasing and dispatching field check packages to the Army Svy Regt. Where possible cartographic tasks are carried out on the graphic edit workstations.

Aerial photography teams are provided by this Sqn for mapping, ident and supplementary photography tasks. Planning is conducted for each task by the Air Camera Operations Section and bids are submitted to LHQ for AAAvn or civilian charter aircraft hours. RASvy Corps Wild RC10 cameras or leased aerial camera equipment are used depending on the nature of the task.

The Sqn holds approximately 150 000 maps of various scales for distribution on demand to units working in the Central, Southern and Tasmania regions. Mapping held by state authorities in these regions is purchased using Sqn Cash Limited Administrative Expenditure funds.

The Sqn's administrative and logistic requirements are catered for by the orderly room and quartermaster staff respectively, using computer support available on the AUSMIS, DEFMS and AUTOQ systems; and staff support from LHQ, DC-A and Adelaide Log Coy.



## Operations - Field Environment

Field completion operations are mounted by the Sqn to check the integrity of the plotted product, to answer field completion queries raised during plotting and to eliminate errors from photo interpretation and source data information. Whilst in the field Photographic Interpretation Guides are produced to improve photo interpretation skills of photogrammetrists compiling products in similar areas. Operations are mounted with teams of two personnel verifying map information using Landrovers and helicopters. In the past all additional features have been positioned by basic survey means, now inexpensive hand-held GPS receivers are used. Supplementary photography is taken to position new areas of detail, using a fixed wing aircraft and a Wild RC10 aerial camera. Aerial photography is also taken of Vital Asset Protection features identified by LHQ.

Control survey operations are conducted using lightweight satellite global positioning system (GPS) receivers to establish control points and aerial photography for point identification. GPS parties consist of two personnel deploying by Landrover or helicopter to the control point. Control points can be located anywhere within an area designated by aerotriangulation requirements (generally a one kilometre square area). The only limitations on positioning GPS points are satellite availability and visibility. Rarely these days are permanent ground survey marks required for mapping control and this has resulted in considerable savings of resources and time.

Aerial mapping photography operations are normally conducted using two by two man air camera operating teams, a Wild RC10 camera and a chartered learnt. Where possible use is made of RAAF Versamat film processing and darkroom facilities. Photo assessment is carried out on each sortie after film and paper print processing is completed. The success of each operation is heavily dependant on the amount of cloud cover caused by prevailing weather conditions.

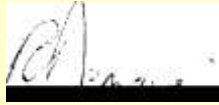
The Sqn has provided survey assistance to DTRIALS for numerous explosive ordnance and rocket propulsiveness trials.

The Sqn also provides engineering, plane and geodetic survey assistance to various units and agencies. To carry out these tasks the Sqn has a Sokkisha Pentax Total Station, Sokkia B21 automatic levels, Magellan GPS NAV 5000 PRO, Trimble hand-held GPS, graphic edit workstations, computer aided draughting software and equipment.

## CONCLUSION

The Sqn has conducted numerous survey operations and tasks within Australia and overseas since it was formed in 1952. This work along with that of 1, 2, 5 and 8 Fd Svy Sqns, the Army Svy Regt, various Commonwealth and State mapping agencies, has provided a sound basis for future ADF mapping requirements.

The history of surveying, mapping and charting work carried out by all RASvy field survey units is too great to be adequately summarised in this paper. Hopefully one day this history will be written for all Australians to appreciate.

**NE PLUS ULTRA****P.C. DEMAINE**

Major

Officer Commanding 4th Field Survey Squadron

30th November 1995

Annex:

A. 4th Field Survey Squadron Field Operations and Tasking

## 4 Fd Svy Sqn Field Operations & Tasking

*By Peter Demaine*

- 1946** Reconnaissance of control stations in the Whyalla and Cowell region SA. Reconnaissance of Woomera Rocket Range.
- 1947** Triangulation at ? Range Area and Adelaide - Jervis; and levelling in the Pimba area SA.
- 1948** Triangulation at Cooper Pedy, Koolymilka and ? Range Area; levelling at Koolymilka; and verticals at Billa Kalina.
- 1949** Major and minor triangulation, astronomic observations and levelling in vicinity Adelaide River NT, Gladstone and Mt Eba SA.
- 1950** Koolymilka SA base line measurements, 11 control points in NT, and astro observations at The Knoll SA.
- 1951** Traversing and levelling Mt Eba - Koolymilka SA. Survey Bordertown Rifle Range.
- 1952** Photo control of Coorong and Meningie 1:63 360, traverse of Alexandrina 1:63 360, and levelling of Alexandrina and Meningie 1:63 360.
- 1953** Levelling of Coorong, Jervis, Yankalilla, Encounter, Poopena 1:63 360, P&EE Port Wakefield and Cultana Training Area. Topographic traverse of P&EE Port Wakefield and Lincoln Gap 1:63 360.
- 1954** Tacheometry and angle observations for Encounter and Milang 1:63 360.
- 1955** Minor triangulation of Lincoln Gap. Signal survey of O'Halloran Hill and Gould Creek area. Tachy traverse Tassie Hill to The Hill. Levelling of Jervis and Milang 1:63 360 and Tassie Hill and The Glen 1:25 000. Theodolite and chain traverse at P&EE Port Wakefield.
- 1956** Tachy and topographic angle observations for Multiplex control of Corunna, Roopena and Jervis 1:63 360; and Alligator Gorge, Corroberra and Simmens Hill 1:25 000.



- 1957** Kangaroo Tie angle observations. Triangulation, 3rd order traversing and levelling in the vicinity of Adelaide River, Marrakai, Coolibah, Humpty Doo and Koolpinyah NT.
- 1958** Tellurometer traverse Beatrice to Darwin and Mt Finnis to Marie. Levelling Eba to Mt Finnis. Resections in the Copley and Leigh Creek area. 4th order traverse Lucy Mine and Mt Finnis area.
- 1959** Astro photo control points in Mt Marumba, Mt Evelyn, Roper River, Port Langdon, Blue Mud Bay NT. Traverse in the Roper River and Groote Eylandt region. Tellurometer and geodetic traverse in the Katherine, Delamere, Urapunga, Roper River, Mt Young, Bauhinia Downs, and numerous islands off the east coast of Arnhem Land NT.
- 1960** WRE Area Tellurometer and other surveys Woomera SA. 4th order Tellurometer traverse Wessel Islands and 1st order traverse observations north-eastern Arnhem Land NT. Traverse in the Daly River region NT. 4th order traverse in the Cape Hotham area NT. Tellurometer traverse in vicinity Borroloola NT.
- 1961** WRE Area Tellurometer and other surveys Woomera SA. Tellurometer traverse north Arnhem Land coastline NT. 1st order traverse, La place and other astro observations NT coastline.
- 1962** Tellurometer and levelling surveys P&EE Port Wakefield. Levelling traverse along Vermin Proof Fence Line SA. Topographic surveys for 1:50 000 mapping of the Woomera area SA. Tellurometer surveys of the Smithfield area SA. Various Tellurometer and theodolite surveys in SA.
- 1963** Geodetic traverse measurements in Woomera and Tarcoola regions SA.
- 1964** Control reconnaissance for 1:50 000 mapping of Woomera area. Control surveys of Gairdner and Kingoonya areas SA. 3rd order Tellurometer traverse in Sundown, Kalabyng, Bon Bon and Vivian areas SA.
- 1965** 1:50 000 mapping control of the Woomera area - Lake Wirranda, Ingamar, Mt Sandy, Gina, McDouall, Millers Creek and Bulgunnia. Running of 3rd order surround traverses and fixation of photo control by radiations from traverse stations and existing control.
- 1:100 000 mapping control of Mt Gambier and Northumberland region with no traversing of higher than 4th order, except for one 3rd order radiation to fix Penola North Tower. Photo control traverses are of up to 4 legs terminating at the photo control point.
- 1966** Photo control of Pinnaroo, Naracoorte, Penola, Elliston, Kimba, Whyalla 1:250 000 areas. Level traverse interconnection of the Woomera area.
- 1967** Theodolite, MRA2 Tellurometer and Levelling surveys in Eastern Arnhem Land for 1:100 000 control. Project C4, Aerodist in Arnhem Land NT.
- 1968** Level traverses and control traverses in the Katherine to Roper River region of NT.
- Control traverse for the Murray Bridge Training Area.

- 1969** Control observations at Murray Bridge Training Area and Cultana Training Area.
- 1970** Control of Simmens Hill 1:250 000 SA. Trilateration of the Port Lincoln Area SA.  
1:100 000 mapping control, annotation and ident photography of Darwin and Fog Bay areas NT.
- 1971** Murray Bridge and Cultana Range surveys and 1:100 000 mapping control of Renmark SA.
- 1972** Project C1 Op WINEGLASS in Western PNG, control survey fixed by trilateration using MRB3 Aerodist and altimeter heighting, also gap and ident photography.  
Ouyen, Horsham and Colac VIC photo idents. Control survey of Woodside Army Camp SA.
- 1973** Project C1 Op PLASTIC FLAGON in Western PNG and Torres Strait, control survey fixed by trilateration and triangulation using MRB3 Aerodist, MRA 301 Tellurometer and Wild T2 Theodolite; Barometric heighting; field completion of 6 x 1:100 000 maps: and ident photography.  
Kingoonya 1:250 000 aerotriangulation control.
- 1974** Op SEA KING in Western PNG, horizontal and vertical control surveys for 1:100 000 mapping using MRB3 Aerodist and Geoceiver; Barometric heighting; field completion of 8 x 1:100 000 maps; ident photography; and tropical field trials of the WREMAPS II Laser Terrain Profile Recorder.
- 1975** Op SHORT WALK at Woomera SA, Airborne Profile Recorder (APR) measurements using the WREMAPS II, panelling and ident photography.



*Photos by Rob McHenry. Not a nice place to get bogged - Don't go around loose wire in a salt pan. Great scenery*



*John Hunter hard at work getting us out. Black sludge under the crust was interesting.*

Op HOT LAND at Yampi Training Area WA, horizontal and vertical control for 22 x 1:50 000 maps using APR, Wild T2 theodolite and Tellurometer traversing, levelling, panelling and ident photography; and road classification of 75 x 1:100 000.



*Home for six weeks at Derby - Photo Rob McHenry*

**1976** Op BRASS KEY vicinity Darwin to Daly Waters, establish horizontal and vertical control by 2nd order traverse using Wild T2/56 or equivalent, Tellurometer, APR, panelling and ident photography; and road classification of 77 x 1:100 000 and 2 x 1:250 000.

P&EE Port Wakefield range survey.

- 1977** Op SHORT WALK II at Kingoonya and Billa Kalina, field completion 20 x 1:50 000 and photographic interpretation guides (PIGS) for 6 x 1:50 000.

Panelling and ident photography of Woomera and Tarcoola area SA.

Field completion of Ouyen and Horsham VIC.

- 1978** Op SHORT WALK III at Kingoonya and Billa Kalina, field completion 16 x 1:50 000 and 3 x 1:100 000; and ident photography.

- 1979** Op DESERT WALK in the vicinity of Maralinga, horizontal and vertical control for 1:100 000 using the AN/ PRR-14 Geoceiver, panelling and ident photography.

Op BRASS KEY II in NT Tac Map Area, field completion of 115 x 1:50 000, panelling and ident photography.

- 1980** Op SHORT WALK 80 in vicinity of Cooper Pedy and Tarcoola, field completion of 48 x 1:50 000, panelling and ident photography.

Op DESERT WALK 80 in the vicinity of Maralinga SA, Natmap APR and panelling.

Op Tropic Traveller field completion of Palmer River Goldfield Roadhouse and Cannibal Creek Tin Mine South.

- 1981** Op CYNTHIA in vicinity Alice Springs to Kulgera, 1:50 000 mapping control using the AN/PRR-14 Geoceiver, panelling and ident photography.

Resurvey of P&EE Port Wakefield SA.

- 1982** Op NERVOSE 82 in the NE region of NT, control survey for 1:50 000 mapping and for the Geodetic Model of Australia 1982 using AN/PRR-14 and Magnavox 1502 Geoceivers, panelling and ident photography.

Op NOTARIAL Stage One in vicinity of Tallaringa and Barton SA, field annotate 48 x 1:50 000 enhanced OPMs.

Op NOTARIAL Stage Two in vicinity of Cooper Pedy and Maria Bore SA, field annotate 28 x 1:50 000 and 2 x 1:100 000 enhanced orthophoto maps (OPMs).

Resurvey of P&EE Port Wakefield SA.

- 1983** Op NEURATION 83 field annotate 15 x 1:100 000 OPMs from Aileron to Newcastle Waters NT; and control survey for 348 x 1:50 000 in NT Tac Map Area using Magnavox 1502 Geoceiver, panelling and ident photography.

Op NOTARIAL Stage Three in vicinity of Alice Springs NT, field annotate 4 x 1:50 000 enhanced OPMs and trials for RAE military infra-structure directory information.

Op NOTARIAL Stage Four in vicinity of Maurice, Ooldea, Everard and Wintinna SA, field annotate 72 x 1:50 000 enhanced OPMs; and field annotate Cooper Pedy 1:10 000 Urban OPM.

- 1984** Op ALGUM 84 in the Republic of Vanuatu, control surveys for 1:50 000 mapping using Magnavox 1502 Geocoders and AGA Geodimeter Model 16 short range infra red EDM, panelling, ident photography and aerial photography.

Op NERVOSE 84 APR of Arnhem Land, Barkly Tablelands and Elliott regions NT; field completion of 21 x 1:50 000 in the vicinity of Port Keats and Daly River NT; panelling and ident photography.

- 1985** Op ALGUM 85 in the Republic of Vanuatu, control surveys for 1:50 000 mapping using Magnavox 1502 Geocoders and AGA Geodimeter Model 16 short range infra red EDM, panelling, ident photography and aerial photography.

Op NERVOSE 85 in the East Arnhem, Victoria River and Daly Waters region of NT, control survey for 1:50 000 mapping using AN/PRR-14 and Magnavox 1502 Geocoders, APR, panelling and ident photography; and field completion of 40 x 1:50 000 in vicinity of Larrimah, Fergusson River and Mount Evelyn NT.

- 1986** Op ALGUM 86 in the Republic of Vanuatu, control surveys for 1:50 000 mapping using Magnavox 1502 Geocoders and AGA Geodimeter Model 16 short range infra red EDM, panelling, ident photography and aerial photography.

Op CARTERET 86 on Rocky and Greenly Islands SA, control survey using SALANDS Magnavox 1502 Geocoders.

Op WELCOME STRANGER 86 in the Portland and Hamilton region of VIC, field completion of 9 x 1:100 000.

Op SHORT WALK 86 in vicinity of Woomera SA, field completion, levelling, panelling and ident photography.

- 1987** Op NERVOSE 87 in the Victoria River Downs and Daly Waters region of NT, field completion of 42 x 1:50 000 and 7 x 1:100 000; and key point photography.

- 1988** Op LONGWALK 88 in northern SA, TI 4100 and Trimble 4000 SLD GPS surveys in conjunction with SALANDS for determination of parameters for WGS-84 and AGD-84.

Op OPAL WARRIOR 88 in the Cooper Basin region of SA, TI 4100 GPS and Ferranti Inertial Land Survey - III Inertial Positioning System surveys, station marking, panelling and ident photography.

Op NERVOSE 88 in the Tennant Creek and Auvergne regions of NT, field completion of 68 x 1:50 000 and TI 4100 GPS position integrity checks; and Vital Asset Protection (VAP) and key point photography.



- 1989** Op NERIGHT 89 in the vicinity of the Barkly Hwy NT and QLD border region, field completion of 52 x 1:50 000; TI 4100 GPS surveys, panelling and ident photography of the Weipa, Cape Weymouth and Holroyd region of Cape York QLD.
- Op NERVOSE 89 field completion of 12 x 1:50 000 and 1 x 1:100 000 and VAP photography in the vicinity of Kununurra WA for Ex K89; 88 x 1:50 000 in the Nelson Springs and Delemere region, 24 x 1:50 000 in vicinity of Ti Tree and 8 x 1:50 000 in vicinity of Barkly Roadhouse NT.
- 1990** Op ROAD CLASS 90 in the NT Central Corridor, field annotation for JOG conversion of 9 x 1:250 000.
- Op MIZMAZE 90 in the East Kimberley District of WA, TI 4100 GPS survey and field completion of 48 x 1:50 000.
- 1991** Op ROAD CLASS 91 in the Barkly Tablelands region NT and QLD, field annotation for JOG conversion of 5 x 1:250 000.
- Op OPAL WARRIOR 91 in the Cooper Basin region of SA, field completion of 24 x 1:50 000.
- Op ARIGHT 91 in the Torres Strait and Cape York region QLD, TI 4100 GPS surveys, ground marking, panelling, and ident photography; and VAP tasking.
- Provide survey support at Woomera. SA for Defence Trial 6/451 investigating standard explosive storehouse design.
- 1992** Op EMU 92 aerial photography for 1:50 000 mapping of Mandora, Munro, Ashton and Mt Elizabeth regions of WA.
- Op BELAMA 92 aerial and ident photography for 1:50 000 mapping of Solomon Islands and the Republic of Vanuatu.
- Op KUMUL 92 aerial photography for 1:50 000 mapping of the PNG and Irian Jaya border region; and PNGDF resource photography.
- Op MIZMAZE 92 field completion of 46 x 1:50 000; TI 4100 GPS surveys, panelling, PIG and ident photography of Kimberley region WA.
- Op NERVOSE 92 TI 4100 GPS surveys of Bathurst and Melville Islands, and East Arnhem Land NT; and PIG and VAP information.
- Provide site survey support at Woomera, SA to Defence Trial 8/601 investigating the propulsiveness of Snub Nosed Explosive Burn rockets when subjected to an incendiary fire hazard, whilst in storage conditions.
- 1993** Op NASIKO 93 aerial photography for 1:50 000 mapping of the Republic of Vanuatu.
- Op EMU 93 aerial photography for 1:50 000 mapping of East Arnhem region NT.



Op BELAMA 93 aerial and ident photography for 1:50 000 mapping of Solomon Islands and the Republic of Vanuatu.

Op KUMUL 93 aerial photography for 1:50 000 mapping of the PNG and Irian Jaya border region; PNGDF resource photography; and field verification of Madang Urban OPM.

Op ARIGHT 93 field completion of 78 x 1:50 000, PIG and VAP photography in the northern Cape York area QLD.

Op MIZMAZE 93 field completion of 86 x 1:50 000; PIG and VAP photography of the south-western Kimberley region WA.

Op NERVOSE 93 Magellan NAV 5000 PRO GPS surveys of Groote Eylandt and East Arnhem Land NT; and PIG photography.

Op EASTERN REVISE 93 of 2 x 1:50 000 Specials in the vicinity of Nowra NSW.

Provide site survey support at Woomera, SA to Defence Trial 8/610 investigating the propulsiveness of ZUNI rockets when subjected to an incendiary fire hazard, whilst in storage conditions.

Provide site survey support at Woomera, SA to Defence Trial 8/621 investigating the propulsiveness of SEACAT rockets when subjected to an incendiary fire hazard, whilst in storage conditions.

**1994** Op NERVOSE 94 field completion of 66 x 1:50 000, PIG and VAP photography in the Bathurst and Melville Islands, Cobourg Peninsula and Alligator River regions of NT; and road and vegetation classification of 2 x 1:250 000 in the vicinity of Borroloola NT.

Op BELAMA 94 aerial and ident photography for 1:50 000 mapping of Solomon Islands and the Republic of Vanuatu.

Op KUMUL 94 aerial photography for 1:50 000 mapping of the PNG and Irian Jaya border region; PNGDF resource photography; update photography for PNG National Mapping Bureau; and PIG imagery.

Provide survey and resurvey support at Woomera, SA for Defence Trial 8/631 investigating the effects of structural and external to the structure, of the accidental initiation of hazard division 1.2 ammunition housed in a Spantech explosive storehouse.

Reconnaissance and establishment of a 1st Order Control Point (K906) at DSTO Salisbury, SA using Trimble 4000SSEs GPS receivers. The control point was connected to Australian Geodetic Datum 1984, the International Terrain Reference Frame and the Australian National Network.

Provide survey support to 21 Const Sqn Det, RAE construction of the Environmental Test Facility and re-coordinating survey control points for PEE, at Port Wakefield, SA.

Establish compass calibration stations at El Alamein Camp, Cultana Training Area, SA.

**1995** Op MIZMAZE 95 field completion of 48 x 1:50 000 in the Ashton and Mt Elizabeth regions of the Kimberley WA; and 24 x 1:50 000 of Darwin, Mt Bunday, Katherine and Delamere regions of NT. VAP photography for Ex K95.

Op EASTERN REVISE 95 field completion of 5 x 1:50 000 in the Nowra and Williamtown regions of NSW.

Establish survey control for a compass calibration station at 16 AD Regt, Woodside, SA.

## Tall Tales & True

### THE AMERICAN PILOT

*BY Rob McHenry*

In 1972/3, a posting to 8 Fd Svy Sqn, Popondetta, provided some interesting moments. On one particular occasion, I had to fly from Popondetta to Port Moresby in the Porter we were using for air photography. I had been tasked to survey in a sneaker range at Goldie River.

Alex Laing was my OC and he informed me that I would be taking an American pilot as a passenger. After a short time he added that the pilot had died during the war (presumably 1944?) and his fighter aircraft, complete with him still in the cockpit, had only just been discovered somewhere near Kokoda.

During the war, mapping of the mountains dividing Port Moresby from the north of the country was pretty basic to say the least. Often, pilots returning to Port Moresby from missions north of the Owen Stanley Range were left with the daunting prospect of having to fly into cloud in the hope of making it through whatever pass they were looking for. The other choice was ditching north of the ranges in enemy held territory or simply running out of fuel. For those who have flown in PNG, particularly prior to the jet era there, it's easy to understand the genuinely horrible feeling many must have endured as they faced a wall of cloud covering mountains of undetermined height, a fuel gauge that was hovering somewhere near empty and nowhere to land.

Not sure what to expect, I was duly handed a sugar bag full of bones and the pilot's identification bracelet and watch. I was advised that I was to hand these over to a representative who would be waiting at Moresby airport. At this stage I was a little surprised that there was nothing from the aircraft but didn't think too much of it.

In the Porter flying over Kokoda on the way to Moresby, I couldn't help wondering what the pilot went through in the moments before he slammed into the trees.

On arrival at Moresby I was met as arranged but this time was quite surprised at a complete lack of ceremony as I handed over what was left of an airman who had given his life for his country. I'm not sure what I expected but a simple "Here's your bag" and "Thanks" was a bit less than I would have hoped for. I don't remember now who I handed the bag to but I have often wondered what eventually happened with the remains and whether his relatives (if any)

were informed. Tom Royle was the unit 2IC at the time and he may have more information on the eventual outcome. However, one difficult to believe and ironic outcome I was told was that the bones were eventually interred in a US cemetery in Japan. Of course, the validity of this information is questionable as I don't remember where it came from.



*Pilot's bracelet and watch. Marsden matting background at Moresby airport.*

## **NIGHT NAVEX**

*By Rob McHenry*

4 Fd Svy Sqn in the mid to late 1970s. George Gruszka was the OC. Someone had the bright idea that we should get some assistance with our regimental training and enlist the aid of training staff from Cultana. Thus, the Sqn was informed that we were going to do a night NAVEX under the supervision of a Major from 3RAR.

It was a dark night at Cultana, a camp fire was burning and our 3RAR major looked very macho in his starched greens. He briefed us on a NAVEX course through the bush and advised that we were to be assessed on how fast we could complete it. The exercise consisted of teams having to visit about 15 checkpoints as quickly as possible prior to finishing back at the camp site. The major also told us that some local unit had finished it in an impressive time of xyz hours and implied that obviously, as we were not infantry trained, we would take considerably longer.

This statement was regarded as a challenge by the lads of 4 Sqn so after being divided into teams of four and being provided with a map, compass and torch we were off. Each team

had different start points to visit but each team, without exception and without any collusion, decided to split up and divide the individual team's task. This seemed very logical from an RASvy Corps perspective as it would obviously reduce the time for each team to visit the checkpoints and complete the course.

Therefore, using the tools provided, we all planned the next point to hit and where to subsequently RV and then rushed off. This worked famously as each team eventually rejoined and finally raced into the campsite over a staggered timeframe all well within the overall xyz time mentioned by the major.

The senior member from each team was duly collared by the Major and a conversation in hushed tones would follow. The major seemed quite miffed and became increasingly agitated and upset as each team arrived. He eventually exploded when, no longer in hushed tones, he asked the next team leader, "Well, what distance did you cover?" To which the RASvy member replied, "F#!%ing miles."

This appeared not to be the correct answer and was the last straw for the distressed Major. As it turned out, we were supposed to do some kind of compass and pace NAVEX and keep some kind of tally but unfortunately, no-one bothered to tell us. After the Major called us all cheats and generally questioned our integrity and parentage, I think George Gruszka decided that a locally-run option for regimental training would be the go next time.

## Cape York Peninsula Mapping Project 1961 (Part 2)

*From a disc provided by Don Swiney*

The following 12 photos follow on from those in the last newsletter and are a small section of 112 total images supplied by Don. I'm not able to incorporate all images into this issue because of size but those that I have shown are in chronological order. More to follow in subsequent issues covering the operation range from Coen to Archer River (Part 1), Moreton, Arakun Mission, Albany Island, Bamaga, Thursday Island and Tuesday Islets.

### THE TEAM

OC: Captain T C (Clem) Sargent	Sapper Peter Sadler
2ic : Captain 'Tommy' Tomlinson RE	Sapper Darryl Parker
Lt Larry Abaro (Philippines Army)	Sapper Andrew Warwick
WO 1 Ron Newman	Sapper Dave O' Hara
WO 2 Len Davies	Sapper Don Swiney
WO 2 Joe Farrington	Sapper Bruce Cockburn
WO 2 Harry Wright (part)	Sapper Brian Rodgers
Sgt Jack Waller(SQMS)	Cook : Pte Col Bryant
Cpl Ian Bryan	RAEME : Cpl Ted Parker
Cpl Mick Symmons	RASigs : Sig Paul Nitske
Cpl Peter Bates Brownsword	Heli Pilot : Bill Parry
Cpl Bill Jeffries	Heli Mech
Cpl Lloyd Harvey	Cessna Pilot



Moreton base camp



Where the onions were kept - Moreton base camp

Peter Sadler

Arakun Mission



Ted Parker's falcon



Married couple's hut







School children

Waterfront at Arakun

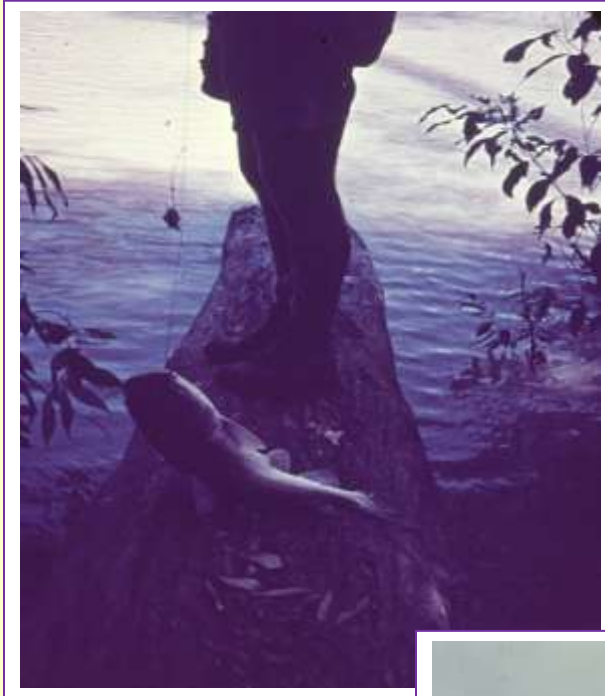


Helicopter with  
astro party on  
board

Wenlock River near astro  
A538



stn



Catfish caught in the Wenlock River

Approach to Albany Island



## Vale

### GRAEME DOWD

*From Alex Cairney*

Received advice that 39748 GRAEME STANLEY DOWD passed away 15 or 16 May. Understanding is that Graeme died from throat cancer but this is not confirmed. Funeral service was held 24 May on Bribie Island.

### LAURANCE KENDALL HAZLEWOOD

*From Charlie Watson*

N276587, NX140976 Laurance Hazlewood passed away on 28 Jun. Laurance served in 2 Field Survey Company during World War 2 (Dec 41 - Jan 46) and later as a senior Geographer at NATMAP. A short note by Laurance of his wartime Army service 1942 -46 follows:

*A growing undergraduate interest in geography caused me to seek service in a topographic survey unit once I turned 18 in October 1941. But not until May 1943 did I end up in the 2nd Field Survey Coy, O.C. Major Clews, by then based in Childers, Qld.*

*Straightway I went to Iron Range, Cape York Peninsula, with No 2 Section, taking part in 1:253 340 mapping by an inland group using astrofix and pace and compass traversing until we were recalled to Iron Range at the end of the year.*

*Next year (1944) I went back after leave in Sydney to the by then largely deserted Iron Range camp until most of my section flew in from working at Merauke, in (Dutch) New Guinea, on 1 September. Then I went out again on an astrofix party working south of the 1943 'strat.' mapping of Weipa sheet until we all were recalled to Company HQ, now at Ingham.*

*In October (1944) we of No 3 Section left Townsville for Lae, where the topographers worked marking up aerial photos, until I was flown with some others to Torokina, southern Bougainville. A number of us took ship for home leave, disembarking at Cairns on 6 August 1945 for the fateful week before re-embarking for Sydney, where we arrived on VJ Day 2.*

*The remainder of my time before discharge on 24 January 1946 was spent filling in time at the 13th Aust. Field Survey Depot in Lane Cove, surrounded by stacks of topographic maps ancient and modern, mostly working on two University subjects I was allowed to study by correspondence.*



## Photo Gallery

*Photos, old and new, related to RASvy Corps activities.*



Army Survey Regiment, Bendigo - Officers 1991

Back from left - LT Simon Buckpitt, LT ....., OC Tech Dev Cell MAJ Peter Jensen, CAPT Mal Hentschell, LT Peter Liakopolous, LT Christine Frew

Centre from left - ADJT CAPT Geoff Ford, LT Denby Moylan, LT Matt Jackson, LT Peter Crabbe, LT....., MAJ John South

Front from left - OC Carto Sqn MAJ Graeme Wastell, OC Air Svy Sqn MAJ Peter Clarke, CO LTCOL Rene van den Tol, 2IC MAJ Ray Redman, OC Litho Sqn MAJ Bob Coote

(Apologies to those I haven't recognised)