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ISSUE NUMBER 22

The
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THE MAGAZINE OF
**The Royal Australian Corps of
Electrical and Mechanical Engineers**





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RAEME CRAFTSMAN

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EDITORIAL

In this issue is an article by Theo Barker who is currently writing The RAEME Corps History. The aim is to publish the history in 1992, the 50th Anniversary of the formation of The Corps.

Mr Barker is still gathering material and, as he explains, is interested in any information relating to The Corps, its members and families.

History is made of people and their activities, and only becomes history if recorded.

All past and serving members, their families and any associated with The Corps are urged to contribute and become part of our recorded history.

It is a long time since we had articles from our 'first line' EME people. I urge those of you in Tech Spt sub-units, the ones closest to the units we serve, to put pen to paper and let everyone know of your activities. The closing date for the next edition is 1 October 1990.

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1st October 1990

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FRONT COVER PHOTO

2 Sig Regt Wksp somewhere in 'The Centre', set up for convoy repairs en route from Melbourne to Darwin - Ex K89.

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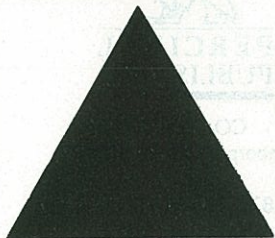


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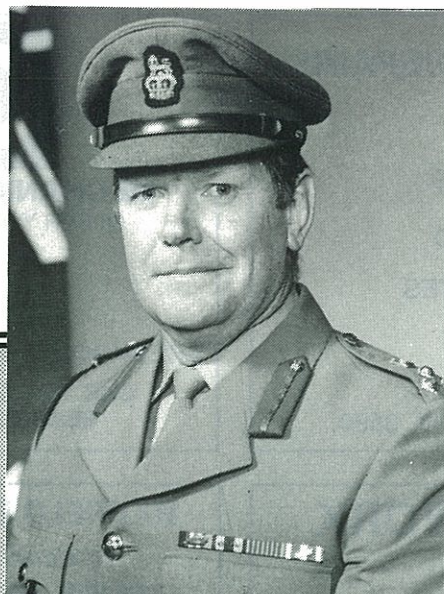
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Brigadier R.M. Millar ADC

FROM THE DIRECTOR GENERAL

It has been my pleasure to meet many of the soldiers of the Corps during my first year as your Director General and I have found them refreshingly honest, hard working, technically proficient and forthright with their comments and suggestions as to how the Army and the Corps can be improved. Keeping in mind one particular comment that the "Craftsman" could be improved if my contribution was reduced I will confine myself to a few short topics.

We are constantly seeking ways to improve our productivity and work methods in an effort to reduce resource consumption, whether it be manpower, contract repair finance, repair parts, ARES training days or whatever. If we want to influence the way resource constraints are imposed rather than just suffer across the board arbitrary reductions we must examine our work methods and procedures and identify ways of improving productivity. I have seen evidence of such self examination everywhere I have visited in 1989 and I detect a genuine will to be frugal and to do the job more efficiently. In 1990 therefore MEA will be running a programme in conjunction with the functional commands to get back to basics and repair by repair, rather than by replacement, where it proves economical to do so. MEA will be drawing together all those repair techniques that have been developed in EME units and elements throughout the Army so that they can be published on an Army wide basis so that all EME

elements may use them. Your ingenuity and enterprise will be of great benefit in this programme and I am confident MEA will identify considerable resource savings.

The Corps has an unprecedented number of tradesmen undergoing training at present as we attempt to meet maintenance requirements of new capabilities, particularly in the electronics and aircraft fields. These young soldiers represent the Army's future capacity to maintain the availability of complex equipment now entering service. I am aware of experience level reductions in some areas where rapid expansion of capabilities is occurring and seek a commitment from you all to remain vigilant and ensure that failures are not induced by undue pressure to provide equipment and overzealousness on our part to accommodate unreasonable demands. Training requires commitment on the part of the student and the instructor and on the part of the supervisor in the work place. It is gratifying to see the dedication and enthusiasm of personnel involved in training in the Corps and I am sure you all draw some satisfaction from seeing our young tradesmen develop. The continued orderly training and development of tradesmen is a cornerstone to future success of the Corps.

I hope to see many of the Corps members during my visits this year and encourage you to raise any issue of concern with me on such occasions.

Good soldiering in 1990.

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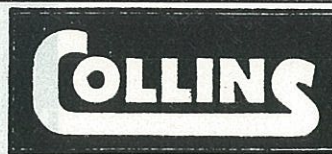
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16th Air Defence Regiment Workshop

by LT Mark Dixon

1989 was a year of development for the 16th Air Defence Regiment Workshop. The beginning of the year saw a change of the hierarchy within the workshop which had all of the soldiers looking forward to "training" their new bosses in the way in which the workshop should be run. Unfortunately for them 1989 saw the welcome return of Major Michael Lappin (ex ASM, ex acting OC) who runs the workshop exactly as he wants and there is no one in the unit big enough or brave enough to tell him otherwise.

After a settling in period the workshop managed to get off to a productive start with morale ever increasing. Enormous effort was put into teaching the Gunners how to look after their equipment more effectively and hence reduce the workshop's after hours workload. Once we had established more effective equipment maintenance and control procedures within the Regiment and had rid ourselves of the bulk of our backlog, we were able to get down to the business of preparing for two deployments of 1989.

In April we packed our bags and headed north for sunny Woomera - or what should have been a sunny period. Once again the Army came through for the locals. After months of drought conditions 16 AD Regt managed to incur the wrath of the Gods by inducing rain conditions which resulted in floods, the likes of which hadn't been seen for 15 years. This kept CPL "Dutchy" Holland and LCPL George Grantham busy with the Mack wrecker pulling bogged vehicles out of the mud.

A couple of months rest for most of the workshop and a lot of hard work by the VM's gave us the opportunity to wash the Woomera mud from our vehicles and prepare for the long trek north to RAAF Curtin for K89. After a safe and relatively boring trip to Curtin (we saw the 816 take its final breath and die somewhere between Coober Pedy and Alice Springs) we settled in and proceeded to show the ARES Grunts and the RAAF how to fight a war. In between digging pits, putting up wire and showing the RAAF how to live in the field, the Pinkies (Rapier Radar Techs) worked night and day to ensure maximum serviceability of the Rapier kits. After long nights of standing and never firing a shot in anger, we packed up and made the long trip home via the west coast. Once again the VM's had to earn their pay and successfully managed to get most of the vehicles home safely (we left three 1 Tonne Landrovers in Northam so that line haul transport would have something to do and feel wanted).

Despite this hectic timetable we managed to maintain the RAEME tradition of having a good time. We celebrated the Workshop's 10th birthday on July 7, 1989 with a Blackies vs Pinkies football match which resulted in the Blackies annihilation of the Pinkies to the tune of 9-4-58 to 0-3-3. We now know that their trade stream is not the only reason that they are called Pinkies.

After K89 we took a well earned break from the Regiment and made a trip to Port Lincoln for adventure



The Mack 'Road Train' Wrecker on the way back from K89 with CPL Terry Pitker completing halt parade service.

training. This short stint of abseiling, small boat handling, sailing, coastal survival (fishing) and diving was a nice rest and just reward for a year of hard work. After receiving a come home soon telegram from the Regiment we went back to sunny Woodside to show the Gunners how to conduct a military skills competition. In 1989 we allowed the Admin Battery to pip us at the post so that this prestigious award could be shared by our fellow logisticians. Dare I say that the two "fighting" missile batteries were a long way in arrears at the third and fourth.

We also ventured down the hill to visit our RAEME brothers and sisters in pogo land for the 4MD RAEME birthday celebrations. This was a successful venture in which we even managed to convince some soldiers into considering a posting to Woodside.

To top off a great year for the workshop we were visited by the DGEME, BRIG Millar, who presented LCPL Craig Charters with the 4MD and National Craftsman of the year award.

We look forward to a pleasant and productive year in 1990 and only hope that it will be as good as 1989. The OC and members of 16 AD Regt Wksp wish the rest of the Corps a safe and happy year in 1990.

Some of the members who left the unit over the December/January period were:

LT Gary Sinclair - 1 RTB
WO2 Mick Burr - 102 Fd Wksp
WO2 Bob Hipwood - 1 Base Wksp Bn
SGT Jim (Jimbo) Booth - 5 AVN Regt Wksp
SGT Ian Fletcher - RTC
SGT Mick Smith - Hobart Log Coy
CPL J J Steensma - Broadmeadows Log Bn
CPL Shane (Booma) Baumgarten - RSTT Wagga
CPL Dennis Gers - 2/14 LH QMI
CPL Jim (JIMBO) McCarthy - RTC
CFN Brian Monaghan - P & EE Port Wakefield
PTE Murray North - 1 Armd Regt
CFN Mark Utting - RSTT Wagga
PTE Ian Woergoetter - 6Fd Supply Coy

131st DIVISIONAL LOCATING BATTERY WORKSHOP TROOP

by CPL R D Sawford.

1 31st Divisional Locating Battery Workshop Troop, stationed at Enoggera, is a unique RAEME Workshop in that like its unit, it is the only one of its type in the Australian Army. To appreciate the origin of the Workshop, it is necessary first to understand the history of the Battery.

UNIT HISTORY

131st Divisional Locating Battery (131 Div Loc Bty) originated as the 31st Locating Battery at Georges Heights, Sydney on June 10, 1952. It was originally a CMF Unit comprising of a Survey and a Sound Ranging Troop with an approximate strength of 80 personnel.

In 1954 the Battery was redesignated as 131 Div Loc Bty but still continued in its capacity as a CMF Unit.

In 1960, the Battery was integrated and had a Mortar Locating Troop added to it. At this point the Battery had an ARA Component of 40% and a CMF Component of 60%.

In October 1965 the Battery was changed back to a totally ARA Unit, with the CMF component transferred across to 133 Div Loc Bty.

The Battery complete did not serve in the Vietnam Conflict although a detachment of some 50 members did man a Mortar Locating Troop, Survey Troop and Sound Ranging Troop. During the detachments tour of duty

(1966-1971) two members were killed and several were wounded.

In 1981, the Unit moved from Holsworthy to its present location at Enoggera Barracks.

In August 1987, in conjunction with the disbandment of 132 and 133 Div Loc Btys, the unit became for the second time in its history an integrated Regular Army and Reserve Unit within the Australian Army.

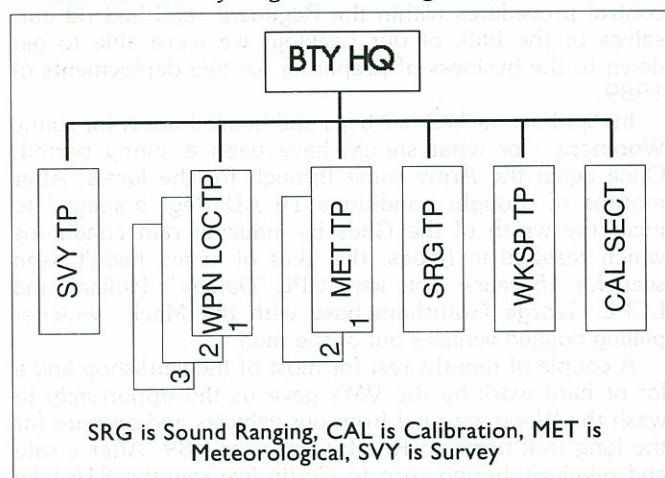
ROLE

The role of 131 Div Loc Bty is to locate enemy mortars, guns and rocket launchers, and to provide meteorological, survey and calibration data to Divisional Artillery Units and Artillery Units of Corps Troops allocated to the Division.

ORGANIZATION

The unit currently has an authorised establishment of 151 ARA and 140 ARES personnel. There are 61 active members against the ARES establishment of the Bty.

131 Div Loc Bty organisation diagram is as follows :



MAJOR EQUIPMENT

Since 1986 there have been vast changes to the major equipment used by the Battery. Some of the new equipment which has been introduced includes the multi-million dollar AN/TPQ-36 Weapon Locating Radar, Sokkisha and MRA-7 Tellurometers and the new AAMS (Automatic Artillery Meteorological System). The near future also sees the introduction of the AN/TNS-10 (Radio Link Sound Ranging Equipment) and GPS Navstar System. The introduction of so much new equipment heralds the start of an exciting new era for the Workshop Troop. This era will no doubt present many problems and hopefully satisfactory solutions.

WORKSHOP TROOP

Prior to 1981, RAEME support to the Battery was provided by the independent unit of 131 Div Loc Bty Wksp with an establishment of approximately 1/32.

In 1981, the Battery moved to Enoggera and the Workshop was disestablished as an independent unit and was absorbed as a Troop within the Battery. The current authorised establishment is 1/19. Many changes occurred as a result of the formation of a Workshop Troop



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Rear row: PTE Grills, CFN Hannigan, CPL Smith, CPL Williams, LCPL Schefman, CPL Drake, CFN Schupplx, CFN Olen, CFN Ellingsen, LCPL Robinson, CFN Greenwood, CFN Heaven, CFN Dare, CFN Harris.
Front row: SGT Hall, WO1 Ientile, CAPT Hicks, SGT Hendriks, CPL McCabe.

such as the RAEME 7AC plates being exchanged for the familiar red and blue artillery.

Many members of the Workshop felt that we had now lost all of our Corps identity, however, in December 1987, "God saw the light" and the Workshop roller doors were painted in RAEME colours (ironically by Artillery personnel).

ROLE

The role of the 131 Div Loc Bty Wksp Tp is to provide first line repair and recovery support to all equipment of the Battery, including up to field repair to the specialist equipment held (AN/TPQ-36 Radar, Survey and Meteorological equip).

ORGANISATION

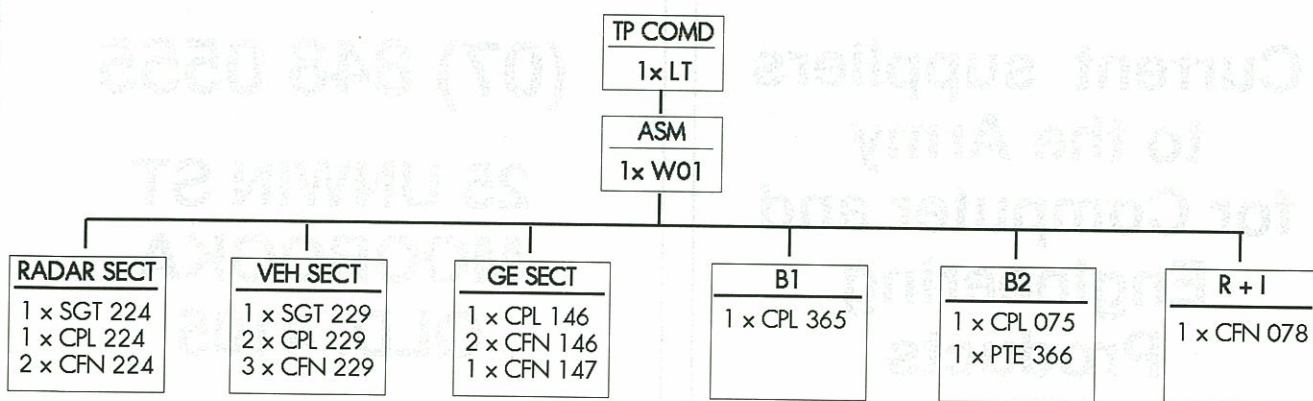
The Workshop Troop is organised as below.

The Troop Commanders position was downgraded from Captain to Lieutenant in an establishment review carried out in June 1989.

SECTIONS

Radar Radar Mechanics are responsible for the repair of all electronic equipment within the Battery. With the introduction of the AN/TPQ-36 Radar, the Workshop establishment was decreased due to the supposed "Operator Maintainability" and decreased downtime of the radar. This has proven to be a major error as the downtime of all three radars is much greater than expected, and with the introduction of other new equipment the workload of the Radar Mechanics exceeds available work-time.

Vehicle Vehicle Mechanics look after the Servicing and



Unit Repair of some sixty vehicles. As far as the VM's are concerned, their job has changed since the introduction of Unimog and the 110 Landrover (for better or worse - they haven't worked out yet).

General Engineering. GE or General Engineering (how posh!) as they prefer to be known are responsible for the maintenance of some thirty generators which require constant repairs (can't wait for the introduction of diesel and an arsenal of assorted weapons). This heavy workload combined with their involvement with an extension to the units all ranks club has meant that the GE section has put in a lot of overtime recently.

HAILS AND FAREWELLS FOR 1989

GIDDAYS

CAPT Hicks HQ1 Div EME

CPL Hall RTC

LCPL Archer School of Arty

CPL Dare 2 Base

CPL Olen 2/3 FER

CPL Schuppli 1 Base

CPL Harris 1 Base

CPL Hannigan 5/7 RAR

PTE Grills 1 Avn Regt Wksp

CPL Snelling Pucka Log Bn

SEEYA'S

CAPT Meehan RMC of S (UK)

SGT Thompson MEA

CPL Sawford Sydney Wksp Coy (after 8 years at the Bty)

CPL Williams Discharge (6MD)

LCPL Corbett RTC

LCPL Love RMC Education Course

LCPL Bailey RAAF Base Wagga

CFN Lawton Sydney Wksp Coy

CFN McConnell 1 Base Wksp Bn

CFN Patrick 1 Watercraft Wksp

CFN Gregory HQ 18 Tpt Sqn

Problems

Supporting those radar troops in different geographic locations (at times many hundreds of kilometres apart) as well as four other troops with a Workshop which is structured to only provide two FRT's provide problems which at times are impossible to overcome.

The lack of dedicated Radio Tradesmen (ECN 225) also creates problems for a unit which relies heavily on Artillery Intelligence and hence effective communications. 131 Div Loc Bty currently holds approximately 40 radios which because of their age and high usage rate require constant repair.

The major problem is the supply of repair parts for the AN/TPQ-36 Radar. When the equipment was purchased the usual procedure occurred with an additional Radar being purchased in lieu of an adequate supply of spare parts. This creates problems in that the RPS of the Troop does not hold two of any major repair parts due to the shortage of these parts throughout the system.

Like all RAEME workshops our plight is the age old requirement to do more with less; something that we must learn to accept.

Conclusions

1989 was a busy year for the Workshop with the first half of the year dedicated to preparation for Exercise K89 and the second half of the year allocated to post exercise repair and maintenance of equipment prior to Christmas. The new decade has opened with the Troop Commander determined that all members of the Bty (RAA and RAEME) will do their part to ensure the highest possible degree of serviceability available.

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AIRWORTHINESS AND ENGINEERING SUPPORT FOR ARMY AIRCRAFT

by MAJ Jack Walker



HQ Logistic Command RAAF – AIRENG2D – Dec 89 Pictured are some of the Army and RAAF personnel involved in engineering support for the Army LOH (Bell 206B-1), Nomad and Porter aircraft and RAAF PC9/A engines. From left: FSGT Henry Ford, WO1 Mark Wharton, MAJ Jack Walker, SGT Stu Pollard, WO1 Bill Sturgeon (now ASM 5 Avn Regt Wksp), CAPT Keith Jobson, FLTLT Dave Brough and WO1 Dave Cronin.

Oakey, SE Qld, might be the home of most RAEME "powder-puff" Warrant Officers but many of those KOALAS (with their claws dug into the woodwork) owe their thanks to WO1 Dave Cronin who, for the past seven years, has been holding down a demanding job in Headquarters Logistics Command – RAAF, St Kilda Road, Melbourne. Dave's dedication to his duty in Melbourne over the years has helped to keep the KOALAS in the trees at Oakey. However, his story is elsewhere in the magazine. First, a short burst on how the RAAF and RAEME interface on engineering support for Army aircraft.

The airworthiness of Army aircraft is ultimately the responsibility of the RAAF. The term "airworthiness" embraces all matters related to ensuring that an aircraft is fit to fly and it requires compliance with standards in design, manufacture and maintenance.

Engineering and maintenance support for Army aircraft are carried out by both Army and RAAF as agreed under the terms of the CGS/CAS Agreement relating to Army Aviation. The Agreement in essence says that the RAAF determine and promulgate airworthiness, engineering, maintenance and training standards whilst Army implement and observe them. In practice this means that the RAAF hierarchy (ie Air Force Office, Air Command and HQLC) is utilised by Army (with Army providing manning in different areas) for aircraft matters whilst Army mans and controls its own Aviation and maintenance units.

Current RAEME manning within HQLC includes a MAJ, 3

x CAPT, 3 x WO1, 2 x WO2, a SSGT, 4 x SGT and a CFN. These personnel have the trades of ART ACFT, ART TES (A), FIT ACFT, TES(A), MECH RAD and CLK PROD and are spread throughout the RAAF Logistics Command organisation. RAAOC are also represented with a MAJ, a CAPT and a SGT.

Other Army agencies involved in engineering and maintenance support for Army aircraft are:

Maintenance Engineering Agency (MEA). This Agency, amongst other things, monitors, assists and co-ordinates the support provided to Army by the various sections of HQLC.

HQ Logistic Command (EME Div). This Command controls, through HQ 1st Military District, the Army Depot Level Maintenance facility – Oakey Workshop Battalion. It is also responsible for the allotment of Army aircraft and engines between units and contractors and, in conjunction with the Repair and Overhaul Division of HQLC, the production of the annual Maintenance Plan.

Land Command. This Command controls both the 1st and 5th Aviation Regiments and Workshops and the subordinate Squadrons and Workshops at Oakey, Townsville and Holsworthy.

MEA has a LTCOL, MAJ, WO1 and 3 x WO2 dedicated to Army aircraft engineering issues whilst HQ Logistic Command has one WO1. HQ Land Command has an Aviation Corps MAJ dedicated to Aviation issues.

ARTIFICER BADGE RE-INTRODUCED



On 5 December 1989, re-introduction of the Badge, Qualification Artificer, was approved. It will be worn on the right sleeve in the same manner as the Ammunition Technical Officers badge. (See Dress Manual para 835.) The following is an extract of the DGEME submission to re-introduce the badge:

The Concise Macquarie Dictionary defines an Artificer as: "a skilful or artistic worker, one who is skilful in devising ways of making things; an inventor."

The origin of the Artificer badge goes back to the early part of the 19th century. During this period the badge (a representation of crossed hammer and pincers), was worn by tradesmen of the British Army. The badge gave instant recognition of the blacksmith and the armourer, the only 'trades' required in the early years of military mechanisation. It was only in the latter part of the 19th century

when machinery became more complex that the title 'Artificer' was commonly used, the badge denoting a higher class of metal working craftsman.

In 1882 the Corps of Artificers was formed and members of this Corps generally wore the uniform of the regiment to which they were posted but with the Artificers badge worn to denote their profession. The Corps of Armourers and the Corps of Artificers together with the Ordnance Store Corps (formed in 1865) were amalgamated in 1894 to form the Army Ordnance Corps, the forerunner of the RAOC. The hammers and pincers badge continued to be worn by tradesmen in the Army Ordnance Corps throughout the Boer War, World War I and through the interim years.

In 1942 the Corps of REME was formed and the tradesmen brought their badges (hammer and pincers) with them into their new Corps. REME artificers wear them to this day as recognition of their specialist skills as do the Artificers of several other Commonwealth Armies. It is a badge that is held in high regard.

The Australian Military Forces Standing Orders for Dress, 1935, stated that the Armourer Staff Sergeant was authorized to wear the distinguishing badge of the hammer and pincers. This is the first official recognition of the Artificer qualification in the Australian Army and the badge was worn throughout World War 2 in a black oxidized finish by entitled personnel. No record can be found of when the badges ceased to be worn but it is believed to be one of the many embellishments and forms of dress which ceased to exist at the end of the war.

Considerations

To qualify as an Artificer, a member must undergo the following technical training:

a. Basic apprenticeship training of four years through the Army Apprentices School. Alternatively, the initial apprentice training may have been undertaken through a four year civilian apprenticeship, through the 12 months basic Adult Trade courses at RAEME Training Centre or through the RAAF School of Technical Training. Such training qualifies the members as a basic tradesman.

b. Following on from the basic trade course, a number of technical courses according to trade must be undertaken over the next three to six years at RAEME Training Centre or other civilian or military training institutions. These courses are necessary to qualify the tradesman in the specialist technical skills required to maintain Army equipments. The average for these courses is a total of approximately 16 weeks.

c. Additional technical training is undertaken to qualify tradesmen in Subject 4 for Sergeant. These courses have an average duration of 10 weeks.

d. To attain the qualification for Artificer, selected tradesmen who have reached the rank of Sergeant must then successfully complete the Subject 4 course for Warrant Officer in their appropriate trade. These courses have an average duration of 20 weeks.

In summary, to become eligible for qualification as an Artificer a soldier must undergo on average approximately 12 months full time course work after qualification as a basic tradesman and will possess on average 15 years experience in his trade.

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THE RAEME HISTORY PROJECT

by Theo Barker

Since late in 1988 I have been researching the history of RAEME. As I plan to start writing it soon this seems an appropriate time to report progress.

In October 1988, I was given a brief by the Corps Committee to produce a manuscript (it will also be a computer disk) covering the history of RAEME, AEME, Mechanical Engineering Branch (AAOC), and appropriate events as far back as necessary. The early history not only has intrinsic interest but is also needed to show where we have come from, so to speak. However, most of the book will cover the period from World War I to the present time.

As format and publication are matters for the Corps Committee, I supply the following information with a warning that changes may occur. The history is to be a single volume, probably A4 size, containing text, illustrations, quoted material, and maps. The policy is to avoid a dry-as-dust tome and to aim for a book that can be used for browsing, but containing the historical information that readers have a right to expect. The Time-Life History of the Vietnam War is a possible model.

I do not commit myself to any prediction about length. My intention is to write what I think needs to be written and to worry about the consequences afterwards. This may produce some qualms in the ranks of the Corps Committee but I believe that it is easier, if necessary, to reduce a long manuscript than to increase a short one. The important thing is to record as much as possible of

RAEME's significant history.

My fields of research are the major libraries in Canberra and other capital cities, The Australian War Memorial, and the RAEME Training Centre at Bandiana. I intend to visit every state and the Northern Territory before I start to write, not only because it is essential for me to meet people and find what they have that I might use, but also so that I can absorb the Australia-wide nature of RAEME's operations. So far I have been to the ACT, Southern Queensland, Tasmania, Victoria, Western Australia and South Australia. Shortly, I plan to visit north Queensland and Darwin. For various personal reasons I have left my home ground of New South Wales until last but I plan to start there at the beginning of March. These journeys have been made possible through a grant to cover travel, accommodation and other expenses, from the Australian War Memorial.

My other sources of information are written submissions, and taped interviews with RAEME soldiers both past and present. At the last count I had approximately sixty hours of tapes and about forty manuscripts but I expect to add to the tape collection during future travels and I emphasise that more written material is welcome. If you have experiences to relate please let me have them. Do not assume that your career is unimportant. I will decide whether your information goes into the history but I would like to have the opportunity to make that decision – and please note that anecdotes can be humorous, sad, serious, or revealing. One request, though – be sure your information is authentic or, if it is second hand, that your sources are reliable.

I would also like news about photographs, diaries, letters and anything else that originally came from the field of action. If you possess any of these precious things it is better to inform me about them than to trust them to the mail. If you do so we can discuss their suitability and availability to me.

Another aspect of RAEME that I want to cover is the families. Somewhere there must be spouses and children of ARA soldiers who can write accounts (either short or long) of their experiences as part of an Army family. If they do, they will be helping me very much and, what is more important, contributing to the history of the Corps. There are no restrictions on content so far as I am concerned but remember that what you write might become public knowledge. If in doubt, ask me.

For now, only two things more. I expect to publish at a later time the names of those who have contributed to the history whether their material is used or not, but in the meantime I want to thank the staff at the RAEME Directorate for much assistance in various ways, the Colonels Commandant of the Military Districts, and the many people around Australia who, so far, have assisted me. In this I include the many others whom I intend to consult in the near future.

The last matter is my address. It is

Captain (Hon) T J Barker
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February 22nd, 1990.

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101 Field Workshop

by CAPT G P Walters

1989 – The Way It Was

1989 was a very busy one for the unit, with at least seven full workshop deployments under the leadership of our OC Major David O'Brien. The entire unit has been able to get our SOP's "down pat." This has been excellent training value but has generated a considerable workload in a very full year. We conducted our unit IMT's, sent a platoon to Tully, celebrated our birthday in grand style, ran adventure training and a myriad of courses, went on K89 and had our men excel on the sporting field.

The first major deployment occurred in mid February which was Ex Rusty Bolt, it was aimed at showing the ROBC how a workshop deploys in a conventional setting. This also enabled the unit to practice it's road movement procedures down to Chiltern Forest where CPL McGrane showed the unit why he had the nickname "Ning" by being hit by lightning for the second time.

Exercise Steady Pack 13-14 April was the next major event for the unit as we meticulously prepared for the staff check that would confirm that in our role as the LSG workshop, we were ready to go. We passed with flying colours due to the high degree of preparation that went

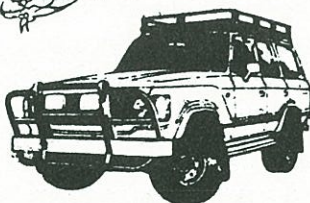
into the exercise.

The unit training cell under the direction of LT Paul Raymond and SGT Bob Lincoln conducted CPX/HF training on 17-21 April, with many of the new unit members gaining their baptism by fire in a RAEME CP.

Exercise Predators Advance in May was the big 1st Brigade exercise prior to K89. It was held in the Pucka Seymour area with the FRG deploying, and redeploying, with the BAA and the MRG deploying as part of the DAA at Mangalore. The MRG set up in a conventional layout taking into consideration defence, security, cam and all those good value things that we all come to love. Once again it appeared that 101 was one of the few units that put the effort in to get it right and it showed.

The ASM WO1 John King led by example having his own pit at 6'6" deep and having to be issued with a ladder to establish a firing position. The FRG led by the masters of diplomacy LT Ken Hoppe and WO2 'Shorty' Bowron rose to the challenge as did the MRG greasers and radio mechs who burnt the midnight oil along with the Q staff who would have preferred to burn their ledger records as

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part of their PISCES Reconciliation.

A week later we embarked on unit IMTs on the Holsworthy Range patrolling, ambushing and generally displaying greenness for which this unit is known.

A platoon was also sent to Tully on EX Wet Spanner under LT Peter Johnson, where with aggressive haircuts and gnarling teeth they were put through their paces, resulting in CFN Shaun Fitzgibbon and CFN David Dunne returning and wanting to go to SAS.

The unit entered the Bde Non Inf Mil Skills comp and although due to work commitments the majority of the team was changed at late notice they performed admirably under the leadership of CPL Glen Lee to come sixth.

On 7 July the unit celebrated its birthday in grand style with a parade reviewed by Maj Gen Gray and a ball in the evening. Prior to K89 we also ran a limited drivers course under the expert eye of our Transport Supervisor SGT Roger Boorman which enabled us to have sufficient drivers to transport us north for K89.

Exercise Kangaroo 89, 14 July to 11 September, the big one for the year saw us lead the other workshops into the AO and set up the RAEME sector of the DMA outside Katherine, before their arrival. In a fairly compact layout we quickly settled into the routine to support our dependencies. The FRG was sent out first to Kunnunurra under LT Harry Worthington and then to Willaroo under CAPT Ian Anderson. Apparently in Willaroo it was found that the top of a certain BMSS was a good place to relax and enjoy the scenery and the best time was when the local ARES females used a nearby shower. Production, however was the reason we were there and the workshop completed over 600 jobs during the exercise, notably in the order of 50 vehicles which were prepared at short notice for their planned (?) trip to Cambodia. The competition was thick and fast in the DMA for K89 challenge to find the champion volleyball and tug-o-war platoons with strong wins to EIR in volleyball and VEH in tug-o-war. With the return of WO2 Tingwell and RECOV boys back to the unit, the darts playoff was never in doubt and they asserted their supremacy to take the title.

On return from exercise and after some well earned stand down we did another workshop deployment for the ROBC 14-15 October. By this stage practice deployments were becoming second nature and the men's efforts were genuinely appreciated by the course.

The next major event was the 100% CES and Inventory Stocktake which saw inventory holders dive for cover, sub-account holders reach for the kevlar boxer shorts and the QM praying for a bush fire to sweep through the unit. But not to over dramatise, after many long hours by the Q staff and checking teams, the results were good and the OC could relax.

We exercised our right to the freedom of the City of CAMPBELLTOWN by marching through the streets as part of the Fisher's Ghost celebrations on 4 November, after which LT Peter Johnson and 20 others sped up to Grafton for a week of adventure training canoeing and skiing on the Clarence River, and training on the banks. The other adventure training activity was the Open Water Dive Course, for 10 intrepid aspiring SCUBA divers which saw PTE 'Kiwi' Turuwhenua eyeing off the sea urchins as a potential au naturel lunch time snack. While this was going on the recov mechs were playing around in fresh water.

The quiet achievers of the unit were removing car bodies from Gibbergunyah Creek, Mittagong, for the Wingerarribee Shire Council with all the unstated professionalism that they have come to be known for.

The Subject Two for CPL Course was our next major endeavour being run on 12 to 26 November. The course members did get a break on 21 November with the running of the Bde X-Country event. This unit was the second placed Bde minor unit with our notable runners being CFN Darryn Yates, LT Peter Johnson and CFN Warren Male. In fact the unit fared very well in the sporting arena this year.

The Moorebank Mongrels Aust Rules team brought the Bde to its knees. Being predominately RAEME personnel with nine 101 players. This combination, reputedly better than the legendary Pukka Demons of the past, crushed all opposition and disposed of 3 RAR in the Grand Final to remain undefeated for the season. Notable players were CPL Mick "give me the ball I want to score another goal" Omeara, LT Ken "hit em where it hurts" Hoppe, LT Paul "ugly stick" Raymond and CFN Shane "Monty" Moncur.

LT Tony Tripley and SSGT Tony Eklom made the NSW Army touch team. WO1 John King and WO2 Ken Chamberlain also went on to make the NSW Combined side. In volleyball CFN Dave Dunne and LCPL Darren Guild made the Army side and CFN Shaun Fitzgibbon made the NSW combined side in that sport. CFN Ashley Le Boydre picked up a couple of state titles in semi contact Arjuken Karate so be careful next time you hassle the orderly room staff. A couple of our members went on to be selected in the Australian Army teams in their respective sports. CFN Darryn Yates made the Aust side for hockey and CPL Mick Omeara and LT Paul Raymond made the Australian side for Aust Rules. LT Greg Walters was selected to represent the Australian Combined Forces Team in basketball.

That was the way it was at 101 Field Workshop 1989, a year of hectic excitement, productive output and non stop action. If anyone could do it, we could, and we did. As the end of year posting cycle comes around, once again we hear those familiar words, "No Sir, I want to stay here and be with the boys in 1990."

RAEME OFFICER RESIGNATION LIST

RANK	NAME	DATE	UNIT
MAJ	VEARING BR (Brian)	3 Jan 90	Pukka Log Bn
MAJ	BASFORD RC (Rob)	14 Jan 90	2 BW BN
CAPT	McPHERSON MI (Ian)	31 Jan 90	Adelaide Log Bn
MAJ	GROCKE K (Kym)	5 Feb 90	1 BW BN
MAJ	CLEASBY-JONES PD (Peter)	17 Feb 90	MEA
LTCOL	HOPPER PD (Paul)	18 Feb 90	HQ 1MD
LTCOL	COOLAHAN SB (Bryan)	18 Feb 90	HQ 1 Div EME
COL	FORD MJ (Mike)	25 Feb 90	DTS-A
BRIG	ERMERT C (Conrad)	4 Mar 90	DGLOG-A
LTCOL	KING JL (John)	5 Mar 90	Mat Br (AO)
CAPT	KIDD AD (Alex)	22 Mar 90	HQ 1MD
MAJ	HENRYS VP (Vince)	1 Apr 90	21 Sup Bn

THE CLAYTONS WORKSHOP COMPLEX

(1 Base Workshop Battalion)

by Lieutenant Joe Murphy

It was almost that time of the year again, Silly Season. 1 Base was winding down after record production figures for FY 88/89 and the promise that they'll be just as good next year.

It was November 89, time for the unit Cactus Club finale to farewell all outgoing members of the unit and welcome in the lucky ones. A tug-o-war competition was organised, however Brisbane brought down the showers, so it was off with the shoes and socks and a shortened indoor competition was contested. AE, GE, EE and the rest were well represented, however on the day AE was far superior, they took out the final 3-0 and the prize of a carton soon vanished. The raffles were drawn and then it was down to some socialising.

The year was closing so it was decided to hold a CO's Parade to recognise those who had done well for the year and also farewell the RSM WO1 A.B.Gascoyne from the Army. The parade was a shortened version to the norm and all were thankful as the thermometer was working its way up to the mid 30s.

CFNs Cavanagh and Thomas shared the 1 Base App of the Year Award. LCPL Pete Williams took out the Craftie of the Year Award not only for 1 Base but for 1 MD. Congratulations go to all who did well throughout the year.

After the parade an 'almost anything goes' sports competition was held which mixed skill with water, wheelbarrows, crafties, civvies and anything else and provided great enjoyment for the crowd. With close scoring in all events

GE managed to take out the top Pl for the day. The carnival was followed by a BBQ and drinks. Somewhere along the line someone threw the Sports Officer into the pool and that started a chain reaction. By the end of the day everyone was wet including wives, girlfriends, kids, the CO, RSM, MA and even some people who visited the boozier for quick drink. It was a cool way to top off a hot enjoyable day.

The unit commenced a gradual closedown until 22 Dec when there were only 3 duty pers left. The place was dead quiet over Christmas apart from the huge storm which rocked Brisbane on Christmas Eve and let off all fire alarms within 1 Base.

1990 started in normal fashion. The usual increase as people returned to work talking of their plans for next year. It was a relief to see all had returned to work after some major disasters which had rocked the nation.

With the formation of a Logistic complex in Brisbane and the reformation of 1 Base Workshop Battalion, the HQ are busy drafting revised manning of establishments etc. a job nobody envies.

Notable events for 1990 include the Drivers Course in Feb - CGS visit on 21 Feb - Unit Exercise in April - new accommodation block for the ORs.

Events from 1989

The large black cannon from MUA was finally removed and placed in its final resting place.

AE Platoon were given the job of a Mack Dumper rebuild. At a starting ERT of 400 it was a job that would stay on the floor for a long time. After three months it was completed and returned to its owner.

With the cut back in finance for the Army Sheetmetal section, GE have instigated a reclamation/rebuild programme. The programme has been operating for about four months and is saving thousands of dollars a week. Equipment that is normally thrown away as scrap is being returned and rebuilt.

The unit's Steam Cleaner operator, Mr Joe Ruiz Diaz retired on 23 Feb 90 at the ripe old age of 65. He had completed 19 years at 1 Base.

Retirements

The following members from 1 Base Workshop Battalion have retired from the Army:

Major Brian Woods Feb 89
Major Kym Grocke Feb 90
Captain Peter Leslie Apr 89

Sporting Achievements

1 Base had a fairly successful year in sport. We were represented at the Annual Bde Cross Country run at Enoggera where we were placed fifth. We participated in the SQA Athletics competition and although our overall placing wasn't the best we had some good individual results. Our touch team is currently on the ladder while our cricket team is 'batting on.'

1 Base stole the 1 Base/5 Base annual golf trophy from 5 Base after they informed us it hadn't been held for a couple of years and that they were putting up the challenge. Thanks 5 Base.

We are at the stage now of organising teams for this year. We hope to fill teams in all major sports and look forward to some good results during the year.

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NATIONAL MEMORIAL TO THE AUSTRALIAN ARMY

The Prince Philip Banner was one of 34 Standards, Guidons, Colours and Banners which were paraded at the dedication of the National Memorial to the Australian Army in Nov 89. The Royal Guard of Honour was provided by the RMC of A and was supported by detachments from all the Corps in the Army. The six man RAEME detachment was provided by ACT Wksp PI and DGEME.

The Memorial is sited in ANZAC Avenue leading to the Australian War Memorial. The two 4.6m statues of Diggers on patrol are set against a backdrop of seven stone pillars. The pillars represent the seven major overseas campaigns in which Australian soldiers have fought and died -- Sudan, Boer War, World War 1, World War 2, Malaya, Korea and South Vietnam.

With soldiers dressed in historic uniforms parading in the foreground, the Army's principal chaplains dedicate the Australian Army National Memorial in Canberra. Conducting the dedication ceremony are, from left: Principal Chaplain Ernie Sabel, Protestant; Principal Chaplain Doug Percival, Anglican; and Principal Chaplain Gerry Cudmore, Roman Catholic.

A representative group of Colours, Standards, Guidons and Banners paraded during the dedication ceremony of the Australian Army National Memorial added splendour to the occasion. At right is the Australian Cadet Corps -- Duke of Edinburgh's Banner. Third from right is the Army Apprentice School -- Governor-General's Banner, borne by Apprentice Philip Stone, of Stawell; and fourth from right is the Royal Australian Electrical and Mechanical Engineers -- Prince Philip Banner, borne by Lieutenant Troy Stevens, of Sunnybank, Queensland, who serves with 106 Field Workshops in Coopers Plain, Queensland.



21 CONST. SQN WKSP UPDATE 89

by Capt Stuart Calvin

1989 is nearly over and still the sappers persist in breaking things and wanting it last week for a job that was supposed to be done yesterday.

The workshop although separate to the squadron we support, has been under command since 1966 and at times it is difficult to convince the OC of the squadron that we are not 3 Troop.

The ASM WO2 Geoff Sandland and I wonder where 1989 has gone....the new year had the sappers wondering why they had accepted the job of constructing the Puckapunyal AFV Range for the Field Firing Target System. We do not know either because it looked like hard work, but SGT Alf Clegg (21 Sup Bn-where's that?) and his merry band, earned great praise from the planties for the long hours they put in maintaining all the C vehicles. Alf is leaving on promotion to WO2 to 21 Supply in Dec 89.

I took most of the unit to Echuca in March, where, in small groups they took in most of the Victorian countryside over three days 'on foot' and in uniform. The soldiers said that they hated it, but they could not stop talking about it and drank the beer anyway. Speed Howarth

lamented that the Army had finally taken a birthday off him, so we strapped a candle to a cupcake, lit the cake and sang Happy Birthday to him. He still complained.

Resources Troop were at Bemm River constructing a wooden deck foot bridge and suspension bridges through a rain forest so people could get a clear view of the lantana. CFN Bob Wyse spent more time as a sapper and mudlark than as a VM, but he said it was 'fun.'

K89

As well as Bemm River and the AFV Range, both units prepared for EX K89. We would not have got to Katherine with our fleet of petrol Internationals so I spent two months on the phone convincing Log Comd, HQ LSF, HQ 1 Const Regt and LHQ that we needed help. Incidentally, all of the Inters from the convoy of HQ 1 Const, the squadron, 198 Wks Sect, 1 CLU and us, arrived in Katherine broken on the back of 20t trailers, tiltbeds, lift towed by wreckers or A-framed behind another truck. Power dividers are a curse.

So just in time, five new Unimogs and two old D 913s were issued. Somewhere along the line, someone had put

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21 CONST. SQN WKSP UPDATE 89

D 911 springs on the front of one of the D 913s. This caused the front end to be incorrectly located, so much that just after Mildura, the axle went through the sump, causing:

- the engine to make funny noises,
- the ASM to swear,
- the sappers to say that RAEME really is silly,
- me to get very cross,
- the welders to get snappy because they could not weld it up,
- the RPS got agitated and thought we were silly too,
- the storemen lost a truck for a month waiting for parts,
- and a VM wasted a day replacing the springs and sump.

The oversight of an inspector way back down the line drained the RAP of MYLANTA.

At Katherine we were part of the LSF-K, static and proved the value of well located, well constructed field defences. Not one enemy soldier got through except the new improved SAS who are bulletproof and reached the triple concertina on the southern boundary. I am sure they will still bleed if cut though, as they took off when the planties started up a 30t Komatsu scraper and pointed it at them. Barney my corporal welder, and Mahoney who says he's an electrician, were returning from a job at RAAF Club Med Tindal with KAF arm bands on. They rocked up to the gate and told the sentry he was a dead sentry and to let them through, or he'd kill him again!

We heard a lot of 'oh - dearing' one night during an attack after an SAS trooper lost his night scope in the weeds opposite the RHQ boomgate. The umpires called off the war so he could look for it. He did not find it. We always knew there was enemy attack on the cards when the umpires would refuse a beer that afternoon or night.

The men worked long hours (especially after someone rattle gunned studs that were too long into a Scamel transmission). By the way ASM, I think we left that transmission at Tindal. (We did, but I've got their 18" shifter as hostage-ASM), and we did all that was asked of us by the sappers and more, although if only we could get them to plan ahead.....

Being Corps Troops but working under LSF arrangements worked well but I'm sure 1 Divison speaks Greek. They just did not seem to speak the same language as us, especially the Div MPs who envied our relative freedom of the township. They are to be complimented on their enthusiasm in the discharging of their responsibilities but "sorry, we are LSF" saw a lot of Div MPs muttering heatedly under their breath as they stalked off looking for other potential offenders. My opinion is, and I am sure it is shared, is that there seemed to be two different friendly armies around Katherine.

In late May when preparing a pad for the Q Store, the Power and Water Authority chap asked the Advance party if they had found the pool yet....and so for four months we enjoyed the use of a fully filtered, in ground, concrete and tiled kidney shaped pool, suitably shaded and serviced by the Red Rooster Inn. The Q Store was of course relocated.

In all, the Advance Party spent 117 days away and the Main Body 97 days. The Termites (Troops of 30 Term Sqn) got the record with nearly 150 days 'out Scrub.'

I have only one complaint and the problem (parts procurement was a joke too) was most evident on K89, DENG's decision (or was it DGEME's?) to dis-establish the RAEME welders from Resources Troop in the squadron. In

four months my two welders performed over 600 hours of construction welding tasks for the works office, tasks that the Construction Officer would normally order Resources Troop to perform, hence the 3 Troop problem. If Arch and Barney (ex KAF) weren't as good with the 'stick' as they are, we'd have been up the proverbial.

The RAE MECH SVC (super plumber) cannot do the construction welding tasks required for some jobs. This means long lead times for Puckapunyal Log Bn, lots of fine tuning liaison work that they do not have the time to do.

Personalities

Civvy street gained a few extras via 21 this year. They were CFN Wayne Mahoney who will discharge exactly nine years to the day he joined (what are you telling us, Wayne?). Wayne lamented his separation from the Army and was worried that if he had stayed in, he might have ended up as a warrant officer.

Sadly, WO1 Mal Polson decided to pull the pin in mid 89 and throw it up Brisbane way. Mal and I were together at 1 Armd Regt in 1984, where he showed me how to blow rabbits out of their warrens with diesel. He then got me to do it - with petrol. Range Control thought the RAAF were dropping 2000lb bombs without authority.

Lots of people were posted this year, some included Speed Howarth who went to what was once, logically I thought, called 4 Base Wksp Bn. Speed is right into tanks, so much so, that when he gets older he wants to buy one. Andy Chivers made someone a brew at DGEME and went as a corporal to LWC. Blue Watts forgot the sugar in someone's brew and got a field squadron at Townsville. Blue's a good reccy mech and taught Dan Murphy everything he knew. LCPL Jamie Hickinbotham thought a Shark Cat was a motorcycle and accepted a posting to DSU Rocky. I liked James because he drove me to work a lot and offered me cigarettes.

Of those remaining, CPL Dan Harris was so excited by his promotion to corporal he spent two days in hospital getting over it all. Dougie Ollington went over the wire one night while on K89 and still thinks I don't know about it. Doc Holliday was late back from local leave in Katherine one night but the SSM made sure he was early for duty for the following three days. Doc has also successfully completed Subject 4 SGT and thought it was 'scarey.' SGT Ray (I hate Sydney) Allen has been tied to wild horses and chained so we can get him to 101 Fd Wksp in December. Ray insists the move is only temporary until his mate Johnno can get him back to Pucka. Ray hates beer and wants to break Dave Maddick's record of 20 years south of the Seymour turnoff. Ray offers me cigarettes too, but he's still going to Sydney.

Steve Muscolino reckoned it rained nowhere else except Strath Creek during Post K89 stand down. Pete Sherwood reckons he can do a thousand bales of hay in one night and still have time to pat himself on the back. Arch hates playing with skinned foxes, especially when they have spent a weekend inside his Rover. Arch and Barney were the 'eau de cologne kids' for a while since they had to spend a week driving to Katherine a short time later. Paul Glendenning now has training wheels on his push bike, but the boys still do not trust him at speed so they shredded his inner tubes. Paul has rearranged his office a record 143 times. Paul likes rearranging things so much the ASM rearranged him once and for all time.

Col Crawford turns up to work in between Touch and Rugby matches. Col's had enough of Land Comd, if he's

21 CONST. SQN WKSP UPDATE 89

not posted out by Jan 91, he is going to tell the MPs that they will be able to find him in a Log Comd unit somewhere, in February. Eddie Van Rossum goes to the Armd Centre soon and the other tradesmen will be sorry to see him go. Eddie can modify the back end of a lube truck with the rippers of Komatsu dozer. What he is going to do with a Leopard tank is the CO/CI's guess. Brocky came back from Namibia with a tan and a blank look on his face. The blank look must be from the extra \$800 per pay he picked up while over there. Thommo, on the other hand, did not recall volunteering for UNTAG, but he got onto the plane anyway. He must have heard about the \$800. Pete Sellars loves the Army so much he's decided to add 12 months to his engagement by taking LWOP in 1990.

SGT Kev McSween is building a NU-STEEL model railway room outside Warrnambool. NU-STEEL said he could not have an en-suite down one end and that the attached house was not optional. CPL Mark Hughes marched in on promotion in January and was told he was acting sergeant in charge. His pay went from crafty to snake in one day but he is used to money, his missus is a doctor so his salary is play money anyway. I suppose the Army is just a professional hobby to him but I admire his attitude, (what attitude-ASM). SGT Steve Zink trusted Hughsie so much he stayed away a bit longer while he did the ultra scarey Subject 4 for WO. Hughsie did so well we are sending him to Western Samoa for four months with 1 Troop in April 1990.

Scott Clarke showed us how to stuff 52 wild raspberries into his mouth on the way to Katherine. He could not talk,

so we got Barney to do it too but he could still talk, so we asked an opposing touch player to punch him in the jaw during a game in Katherine. Problem was the player got carried away and tried to kick him in the head as well. It only shut Barney up for a day but it was worth it. ECN 226 CPL Dan (they'll never make me a 381) Murphy has a new crafty to train him up. Welcome to ex RALnf Willy Williams. SSGT Frank (I hate .303s) Niggerus runs the equipment account for me. He is assisted by CPL Bob Dolheguy and 'Arnie' Coleman. Arnie looks like Schwarzeneger. Bob used to but he is just a shell of his former self now. Frank hates tools because they have to be accounted for, Bob thinks tools should stay on the shelf because the tradesmen use 'em and lose 'em. Arnie thinks tools are a worry because he raises the demands for them, I think tools are a worry for all of the reasons mentioned.

Congratulations to CPL Pete Richards (RPS) for his second place in the 1989 Champion Shot Of The Army. He is now winning everything else so 1990 looks good. SSGT Vaganak Vaganance (we just call him Vags) paid his last instalment to DGSUP and goes as a WO2 to the great grey sponge up the road called Puckapunyal Log Bn. CPL Brad Stevens wants to be an Ammo Tech, but I have never trusted anyone whose bottom jaw doesn't move when they talk. Rounding our RPS are Sevv and Smithy. Both are very young privates, who like Wayne Mahoney, are wondering why anybody would join the Army.

LT Dave Cowan (supernumery waiting absorption, posting or brain death, whichever occurs first after 18 months) was off to the RAEME element at Perth Log Bn, but somebody else paid more money, so he is now the QM. Lastly we borrowed some appys from Puckapunyal Log Bn for six weeks, sorry, six months and took them on K89. We know who they are because on their last day they defaced Barney's Rover with French Chalk and autographed it! By the way fellas, that was a good spray job you did on your day off. However, they performed above expectations, so they will be returning in 1990, posted as tradesmen.

I have not mentioned LCPL Pete Moore because he is so quiet. I do not know what he does (I do-ASM). CPL Darrell Morgan joined us in Katherine, he is pretty quiet too and the SSM seems to know him quite well. Unlike Mahoney, I am sure Morgs is an electrician.

1990 will not see the unit deploy as a whole, (we work in one-ASM) but sub units and FRTs will be visiting the NT, Maldon, Western Samoa, Pucka Range, RMC, Pucka Range, ADFA, Watsonia, Pucka Range, Sydney and Pucka Range. 1989 will be remembered as the year of the dork and K89.

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THE RESCUE OF A SMALL SHIP

by A.E.M.E.

This is the third in a series of articles by Capt M K Carter, master of the AEME Repair Ship AV2060 in WW II

Just after VP day a small Army ship was forced to take shelter in Palkau Harbour on the small island of Massau just south of the Equator and about 150 km north west of Kavieng.

The ship suffered a complete engine failure and the repair required major machine shop attention. The small Japanese force who occupied the area near the harbour refused to accept the fact that the war was over and would not allow the ship's crew to come ashore, and kept them bottled up on the ship by firing at any movement on the ship.

A radio call for help was picked up in Madang, but as the RAN was too busy on other duties, an AEME ship was sent from Kavieng to try and carry out the rescue, as it had the necessary HP to make a towing job possible.

During the 150 km trip from Kavieng a plan was worked out on how to effect the recovery, and this took the form of using a "Carley" float and a light rope line attached, so it would drift into the harbour and hopefully

move close to the disabled ship. The Bosun and two crew members volunteered to take one of the ship's life boats, row to the harbour entrance dragging the Carley float with line attached. He would then set the float and line adrift and hope the wind would do the rest and propel the float right up to the ship.

The AEME ship arranged its arrival "off" Massau Island at dusk and the tropical darkness gave them a complete blackout. The Masters of both ships had been in radio contact since leaving Kavieng, and both knew of the rescue plan, and felt confident it had a good chance to succeed.

The Bosun and his two crew members rowed the ship's life boat towing the Carley float and line as close as they dared to the anchored ship, set the float adrift and on the first attempt it drifted right up against the ship's side where it was recovered by one of the disabled ship's crew, the line hauled on board, wound onto the drum of the anchor winch, the winch motor started and the heavy haulage rope cable hauled aboard and made fast.

The anchor chain was slipped, a radio call to the AVXYZ AEME ship to start towing and they were away, and they did not forget to pick up the Bosun and his crew, who were madly rowing to get back to the AEME ship.

The Japanese were, of course, alerted when the anchor winch started, but they were too late, and the best they could do was spray the ship with machine gun fire.

The RAN came to the party and were able to persuade the Jap force that the war was over, but apparently a few shots had to be fired to make them see reason.

The AEME ship and its tow arrived safely in Kavieng. Not a bad recovery job by AEME.

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Capt. Carter and his daughter on their property Ororo Park in northern NSW.

**THE PLACE: RAEME TRAINING CENTRE.
THE TIME: EARLY SEVENTIES**

THE HAPPENING: The Duty Officer was doing his rounds of the OR's Mess and checking on hygiene. Under one of the food shelves he noticed a mouse caught in a mouse trap. Being a very conscientious Lieutenant, and being aware that his Log Book had no exciting happenings recorded for the entire weekend, (Duty Officers tour of duty in the hard old days were from Friday nights to Monday morning), he made the entry, "Dead Mouse found in mouse trap in the food storage area of the OR's mess."

Monday morning he duly made his report to the Adjutant. The Adjutant noticed the pretty bare report, and then handed it to the Major Administration. The Major A was very meticulous in his attention to detail. He looked through the report for something exciting, something to start the week off with a bit of military adrenalin. Nothing, except the dead mouse. That'll do.

Major A. "Adjutant, get the Sgt Cook down here at once."

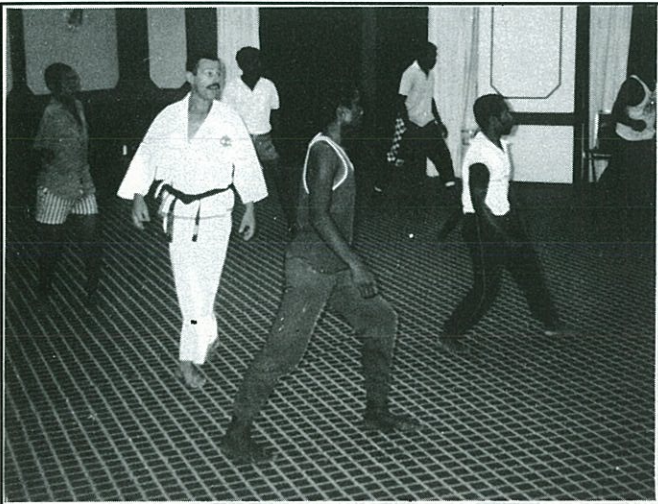
The Adjutant, sent for the Sgt Cook, who was a pretty rough and tumble red-haired Irishman. The Cook arrived and was promptly ushered into the Major A.

Major A. "Sergeant, the Duty Officer reports that there was a dead mouse in a trap in your kitchen. Can you explain yourself?"

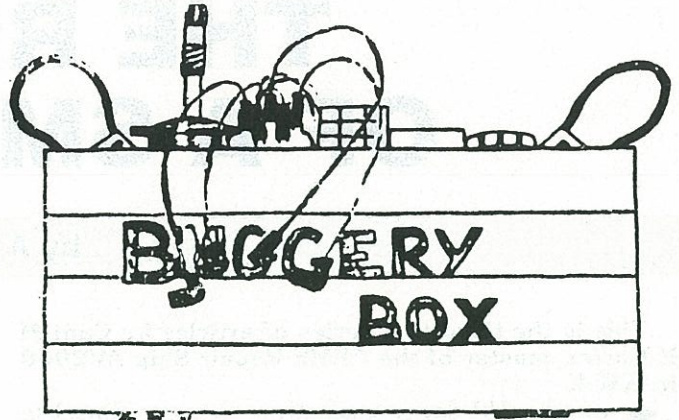
Sgt "Fitz". "Well what do you bloody expect Sir, dead @\$%^&* elephants?"

The Major A's reaction is not recorded, but there were lots of laughs in the Sergeants Mess for the next few nights.

DCP IN VANUATU.



WO1 Paul Jenkinson, RAEME, (pictured above) currently posted to Vanuatu as the Police/Mobile Force Technical Adviser, conducts aerobic classes four nights a week and Tae Kwondo classes twice weekly as a community service to the people of Vanuatu.



Since his posting to Vanuatu he has been actively involved in many voluntary services, including teaching Self Defence to students at Vila's Malapoa College under the highly respected President's Award Scheme and acting as Sports Trainer/First Aid attendant at various sporting events. Although his heavy workload and hectic voluntary schedule leave little time for recreational activities he has managed to become a proficient Advanced Open Water SCUBA diver, and occasionally conducts skiing/sailing lessons! Who said life in the tropics was relaxed!!

RAEME ASSOCIATION (NSW)

The Eighteenth Annual General Meeting of the RAEME Association (NSW) was held at Homebush Training Depot on March 2, 1990.

The Office Bearers for 1990 are:

Patron: BRIG. RSP Amos RFD ED (RL)

President: Joe Marment

Sen. Vice President: Mike O'Donohoe

Jun. Vice President: John Lehn

Secretary: Lawrie O'Brien

Asst. Secretary: Roland Millbank

Treasurer: Norm McNevin

Asst. Treasurer: Barry McFayden

Welfare Officer: Dick Wearne

Committeemen:

Ken Clarke: David Payne: Peter Attenborough: Ray Preston

Padre: Rev. David Hayes

Auditor: Brendan Robertson

Museum Curator: Lawrie O'Brien

Editor: John Lehn

RAEME/AEME personnel are invited to the 1990 Anzac Day Get-Together Reunion at the Cyprus Hellene Club, 152 Elizabeth St, Sydney, beginning at 10am. AEME personnel wishing to march should form up at 9am at Qantas House, Phillip St, and post-war personnel form up at the corner of Bent and Phillip Sts at 10am.

For further information contact L.O'Brien on (W) (02)600 4214 (H) (02)601 2692.

INTERESTING FACT:

There has been no article in The RAEME Craftsman from a Brigade or Infantry Battalion Tech Spt for over three years.



LCPL Troy Walker and ASM WO1 Richard Pratt dig out an EIR truck.

Mud, Mud, Glorious Mud

A 101 FIELD WORKSHOP DEPLOYMENT TO HOLSWORTHY RANGE

An Anonymous Poem
By The SUPO

The CSM was first man in,
"Let me give it a try!"
The next thing we know he's two feet deep,
The mud was axle high.

Next to go was Sergeant Myers,
Driving Two Nine Four, Pretty soon he's in as well,
The mud was at his door,

Ash and Woody gave it a go,
"We'll make this F1 jive!"
"PUT IT IN SIX WHEEL DRIVE!"

Mister Connell was next, trailer in tow,
Towing the cookies bin,
He thought he was going really well,
In fact he was going in!

Dykey was anxious, he'd seen the mess,
Sweat covered his brow,
"I'll have to get the Moggy through",
Thought he "But God knows how?"

Harry Butler stalls not once,
But twice and thrice a time,
"A driver change will see us right!"
Alas, stall number Nine.

Then Mottram came with POL,
He'd done this stuff before,

With a huff and a puff and a heave and a ho,
He's through with pace and more.

The lube and tube was next in line,
With Cuttsy at the wheel,
Without a glance, he's through at once,
"No big something deal!"

The track was getting mighty wet,
The mud was deep as well,
Andriessen saw the plight at once,
And gave his Moggy hell.



CFN Graeme Cutts lets down the tyres on his Unimog "after the horse had bolted."

The cry went out, "No Trailers Please,
The're bogging by the ton!",
Meanwhile in the ring road,
The fun had just begun!

The ARV's were working overtime,
to get the Moggys out,
With Connell, Cutts and Motts all down,
Blimey, what a rout!

After much procrastination,
(and a little swearing too),
The job was finally finished,
At least for packet two!

The Roaches were next to go,
Coupy in control,
And with all the class of an aristocrat,
He's through in just one go.

The RPS was going well,
"We'll get our Moggys through!"
Then Clarkie goes and stuffs it up,
And puts his in the glue!

The 'lecky truck went down with ease,
WO Chamberlain tried in vain,
The SUPO selected six wheel drive,
And the big truck moved again.
Though off to Aero Paddock all,
Ye men of mettle true,
But follow not that Eklom Squire,
Lest ye STILL be in the ooloo!



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BROADMEADOWS LOGISTIC BATTALION

The raising of the Broadmeadows Logistic Battalion is just one more chapter in what has been a very colourful history for the Broadmeadows Military Area.

As early as WW1 the military presence has been felt in the Broadmeadows district and in that time the Area has had numerous purposes and names.

14 December 1988 commemorates the formation of the Broadmeadows Logistic Battalion (BLBn). Under the command of LTCOL P.J. Johnston the BLBn has evolved from the amalgamation of:

3rd Base Workshop Battalion

32 Supply Battalion

Melbourne Metropolitan Transport Unit

District Support Unit (Broadmeadows)

The first Logistic Battalion to be formed in the Army, the BLBn has become a show piece of how three different Corps and four Units could come together and work effectively.

Like all new ideas there were some problems associated with combining four separate Units. Such things as Sub-Accounts and SOP's became nightmares that required dedicated teams to manage them in order to ensure that the BLBn ran smoothly.

Even the minor aspects of a Unit including traffic flow and an internal mail system caused headaches and problems. However, now into its second year most of the BLBn's amalgamation problems have been resolved.

The RAEME portion of the BLBn is formed from the 3rd Base Workshop Battalion and TSSU 32 Supply Battalion, and has been split into two different Companies.

The first, including EME Ops, MAWD, Inspections and Trade Repair and are now part of the Logistic Operations Company, while the Workshop including Tech Spt and the Area Service Station form the second company under the illustrious title of Equipment Maintenance Company.

Throughout 1989 the BLBn has been the focus of visits from a number of Senior Officials including the CGS and the GOC Log Comd to establish for themselves the ability of four Units working as one.

The advantages of a Logistic Battalion have been obvious, a reduction in Administration Staff and streamlining of operations being two examples.

However another positive aspect of Logistic Battalions has become evident, in that the three Corps involved now have a much better understanding of how the others work. This understanding will help us to work together more efficiently by anticipating the limitations experienced by other Corps.

The Battalion hosted the 3MD RAEME Birthday Parade on December 1, 1989 and most RAEME Units or Sub-Units in 3MD had, at least, a representative if not a fair sized contingent present. Unfortunately due to the dedication to the job (which is always prevalent in RAEME soldiers) not all RAEME personnel could attend.

Of course on December 14, 1989 we celebrated the



LTCOL Peter Johnston farewelled at BLBn Birthday Parade.

BLBn's 1st birthday and it was a time to reflect on all hard work many people had put into getting the wheels and cogs turning and keep them turning in a new Unit.

December 18, 1989 saw the posting of LTCOL Peter Johnston to HQ 1MD and the Marching-In of LTCOL Mike Tabone.

LT COL Johnston was farewelled in a manner fit for a King (or Pope, or Governor etc. etc.) during the BLBn Birthday Parade.

As usual the BLBn sent a contingent of paddlers and support staff to the 'Red Cross Murray River Marathon' over the Christmas-New Year break. The paddlers all performed admirably with more than half our entrants completing the gruelling 400 km, not to mention MAJ Craig 'I told you I wasn't too old' Bryan proving his point by gaining a finisher's medallion (a personal goal).

As dawn rises on 1990 the BLBn will rise to the continuing challenge of providing Logisti services to the Melbourne Area and 3MD in general. The RAEME elements will continue to service the fighting man's equipment as well as maintaining our soldierly skills through various training activities.

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WO1 Dave Cronin

APPROACHING 45 YEARS ARMY SERVICE

Dave was born in Biggleswade, United Kingdom in 1930 but didn't contemplate an aviation oriented career like the true "Biggles" until much later in life. At age 15 (and 10 days) he joined the British Army as an apprentice Vehicle Fitter and, as was the system in those early days, he graduated as a Gunner (what luck!) in the Royal Artillery (49 AT Regt).

His next posting was to Malaya in 1950 during the "Emergency" where he maintained vehicles for the 1914 Air OP Flt.

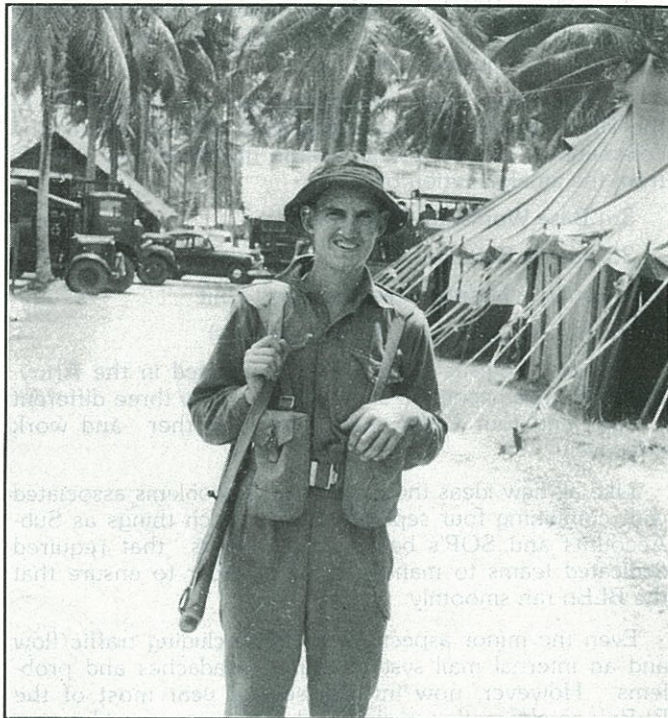
In 1952 he transferred to REME and served with 12 Inf Wksp at Mentacab, Malaya. He returned to London in 1953 and was the Sgt VM for the SIB.

He then attended the Art Veh course at the REME School at Bordon and, on completion in 1955, was posted to Kenya, initially with 7 Inf Wksp and later with the Kenya Base Wksp.

In 1957 he served with 4 Kings African Rifles in Uganda alongside the then Tpt Pl Sgt, Idi Amin. Dave remembers that as the British Army heavyweight boxing champ, Idi ruled his drivers with a fairly heavy hand.

In 1958 Dave was posted to 31 Dvr Trg Regt Wksp in Wales and, in 1960, he converted to an Art Acft at the Acft Engineering Training Wing (AETW) at Middle Wallop. In 1961 he returned to Kenya to be 2IC of 8 Indep Recce Flt Wksp in Nairobi. In 1963 he returned to AETW as an instructor and in 1966 was the ASM of 71 Acft Wksp in Detmold, West Germany.

In 1968 he served with 74 Acft Wksp at Sharjah in the Persian Gulf. Dave then returned to Germany as the ASM



LBDR Cronin, 1914 AOP Fltgh, Temerloh, Malaya, 1952



WO2 Cronin, 8 Indep Recce Flt, Kenya, 1963. On the western edge of "the mountains of the moon" in Uganda, Dave was involved in the recovery of an Alouette helicopter. Note the clouds well below them.

of 73 Acft Wksp at Celle for a final two years before his compulsory discharge (at age 40) in August 1970, after 25 years service.

Retirement didn't suit him, so Dave joined the Australian Army as a WO2 in April 1971 and served with 1 Avn Regt Wksp at RAAF Base Amberley and then moved on to Oakey in October 1971 as the ASM of 163 Recce Sqn Wksp.

He was promoted to WO1 in October 1972 and served with 171 Recce Sqn Wksp at Oakey and then Trg Coy of 5 Base Wksp Bn in 1975 before moving to HQ Log Comd in 1977 and MEA on its formation in 1978. Dave returned to Oakey in 1981 as ASM of 1 Avn Regt Wksp and then back to Melbourne in 1983 to his current position in HQ Logistic Command, RAAF as the resident expert in Army aircraft engines, props, transmissions, et al. Dave has also been the organiser of the last three annual RAAF Bivouacs.

Throughout his life, Dave has also been closely associated with the Scout movement, progressing as: Cub, Scout, Rover, Scout Leader and Group Leader.

After nearly 45 years of continuous Service in both the British and Australian Armies, Dave is again being told to retire at the age of 60 in August 1990. Dave intends retiring, for good this time, to live in his home in Oakey, Qld, with "her indoors" (his wife Cynthia.)

Dave's contribution to Army Aviation over the years is very much appreciated and the expertise he has built up during the last seven years in RAAF Logistics Command will be very difficult to match indeed.

PLACE IN THE SUN

(Darwin Workshop PL)



Front: (left to right) CPL Pianta CFN Bowzy. Centre: Mr Shorty Blacker, WO2 M. Hughes, Mr T. Best, Captain Mewburn, Mr K. Jones, Mr D. Egar. Back: CPL Rulland, CPN Johnston, CPL Myhill, CPL Diery, SGT T. Rykeo, SGT J. Goode.

Members absent: CFN McKenzie.

Darwin Workshop Platoon is located at Larrakeyah Barracks, approximately one km from the city centre, on a peninsular bordered on three sides by ocean washed cliffs. A sun soaked climate for most of the year with an average temperature during the day of 32 degrees. This peninsular, with swaying palms and light sea breezes, makes it an idyllic location for the men of Darwin workshops.

BRIEF HISTORY

Darwin Wksp Pl was established in 1946-47 under the command of a Major. A name change in 1949, to 7 MD Wksp RAEME was appropriate and came under the command of a Warrant Officer. A further 2 name changes, one occurred in 1954 to HQ NT Command RAEME Element and the second in December 1974 to HQ 7MD Wksp Pl, at which time it received a citation from the Mayor of Darwin, Tiger Brennan for its support to the Darwin residents.

Today the unit is part of a Logistic Company, commanded by Captain Guy Mewburn, and will possibly form the basis of a new Logistic Complex early in 1990-91

with the move of 2nd Cavalry Regiment to Darwin.

AREA OF RESPONSIBILITY

Darwin Workshop Platoon has the largest area of responsibility of any single wksp in Australia and covers an area from Broome in WA to Alice Springs in the south and as far as Groote Eylandt on the Gove Peninsula to the East. A sizeable slice of a fairly inhospitable land, with conditions ranging from dry sandy deserts in WA to swampy, mosquito infested marshes in Qld, with some absolutely incredible country between. This area is approximately 25% of the Australian mainland.

WORKSHOP MANNING

To cover the vast area, the Army in its wisdom has manned the wksp with one officer at the helm (CAPT Guy Mewburn), one Warrant Officer as ASM (WO2 Mick Hughes), one SGT as Trade Repair (SGT Tony Rykers), seven OR's and three civilians. I've heard people call our workshop a "Claytons Workshop", but we still manage to provide all the support required to fulfil our role.

TO PAGE 26

K89 - THE 2 SIG REGT WKSP'S WAY

Dear Editor,

I have a confession to make, K89 was great. Perhaps I should clarify so that you don't think I'm still suffering from heat stroke. I'll start from the beginning.

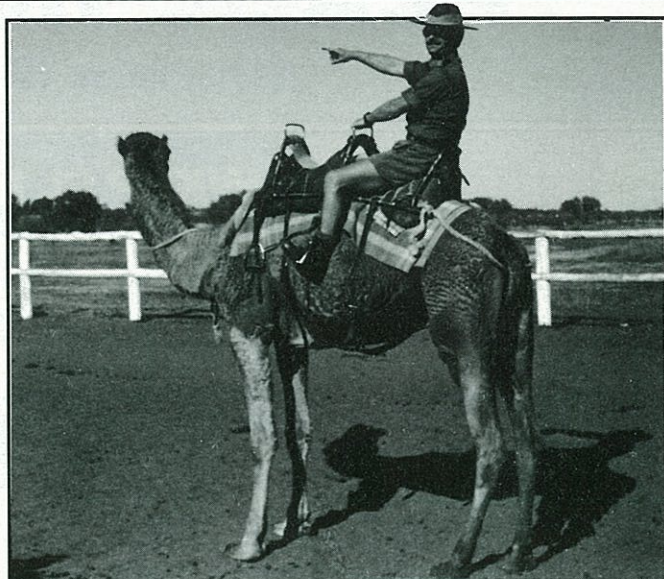
It's 0530hrs on a cold and miserable July morning in Melbourne. Most of the Macks/Mogs are settling into a steady idle, their headlights piercing the light fog exposing all the nooks and crannies in the backs of vehicles to allow the not-so-prepared to stuff away their pers gear. Yes, it's a typical first day of the exercise morning.

A quick kiss and cuddle with the better half and I'm off to the start line to chat with the Convoy Comd. 5 minutes later he waves the first vehicle of my BRAVO packet out of the gate and away we go. BRAVO packet comprises the main body of the Wksp, the convoy FRT and Wrecker being left behind to be part of the last packet. In case you were wondering this split was done to allow us to reach a staging area first, set up and wait for the packets to come through, drop off their still mobile crocks whilst leaving the dead crocks behind to be brought in by the FRT on A-frame and/or tilt bed.

Weaving our way along Mahoneys Road about 4 clicks out I see the Convoy 2IC standing with a group of civvies on the side of the road. A closer look reveals that his Nissan Navara has become the lettuce in a five car sandwich. Oh well, better luck on tow mate.

A fairly standard night in Mildura. A few jobs but nothing too taxing, I wish the refuelling point at the small service station in Mildura city centre was as easy as that.

A fresh brekky and we are headed towards the SA border. We make it into the refuelling point in Pt Augusta on



Wksp OC, CAPT Brian Horvat, was the Convoy Comd for the regiment's 84 vehicles on the return trip from Darwin to Melbourne. He's shown here testing out the new Top End Convoy Comd's vehicle.

PLACE IN THE SUN FROM PAGE 25

With the influx of 2 Cav Regt in 1992 and the proposed change to a Logistic Complex in 1990, the manning of the wksp will increase, however, at this stage it is unknown by how many. Any inquiries regarding postings to the sharp end are to be directed through the proper channels or by phoning (062)655 624.

EXERCISE KANGAROO 89

The start of K89 for the Wksp Pl was in April with the erection of tent city at Larrakeyah Bks and other pre-exercise commitments. As the different units entered the Darwin area, so did the work. This saw the attachment of 23 additional personnel from other RAEME Units throughout Australia, HQ Log EME, 2MD, Base Wksp Bns, Singleton Wksp, Log Coy Puckapunyal, Log Bn Broadmeadows and 107 FdWksp Adelaide.

Their assistance, expertise and professionalism were invaluable and our thanks goes out to those people involved. Approximately 60% of the work load during K89 was repaired by Trade, including the detachments at Kununurra and Katherine. As a comparison, the jobs completed in workshop during 1988-89 was 780 jobs, during the K89 exercise 690 jobs were completed, so you can see just how busy things were.

NEXT YEAR

Next year will be another busy year for the Wksp, with the implementation of the Logistic Complex and the preparation for 2 Cav Regt to the area.

So if you're looking for a quiet out of the way job, don't ask for a posting to the sharp end.

fumes alone. Whew, glad that's over. But, an excellent shower and meal at El Alamein made up for it. A busy night followed. Even the SIGs were busy with the non-techs and grease guns (remember the one about putting grease on the sliding joints on the 110's). We got the whole show ready for the morning but we decided to leave the Camp Manager with a present in the form of an F1 and a Series 3.

A long drive saw us arriving at Cadney Park just on sunset. Another F1 decided it wasn't going to play the game any longer. Two down, thirteen to go. Lucky for some, maybe. Twelve made it under their own "steam" to Darwin, give or take a power-diver or three.

Another "dry" night in Alice Springs followed and an absolutely freezing morning (-3 degrees) saw us motoring towards Tennant Creek.

A short trip from the Creek to Daly Waters meant we were set up ready for business just after lunch. The Engineers were busy behind the old airfield hangar installing showers and thunder boxes. I've never seen ten or twelve thunder boxes in a row. Certainly not the place for the modest.

Finally, after 4,000km, Darwin. The weather was perfect. Larrakeyah Barracks had its gate open in expectation. A quick survey of the Wksp site followed. It was an excellent spot, right on the point overlooking the harbour. A block of concrete for the vehicle wksp, another block for the tels wksp, good hardstanding for RPS, Power and Light and EMEOPS. Great.

Within a day or two the Regimental area was militarized, complete with a barb wire perimeter, cam nets, 24hr manned gates and a ready reaction force with a workshop modified LR 110 (convertible, less doors, with a spot light mounted to the front roll bar).

A few more days later and an 11 x 11 here and a couple of annexes there, some rope, star picquets and hessian and all the Taj Mahals were complete.

At the same time, CPL Lodge and his GE appy from BLB were doing the finishing touches to my EMEOPS

K89 - THE 2 SIG REGT WKSHP'S WAY (continued)



Members of 2 Sig Regt Wksp on deployment in Darwin on Ex K89.

shelter. What is an EMEOPS shelter? Well that's what you get when you refurbish an old sigs shelter, put in a window here and there, repair the air conditioner, install some benches, shelves and fluros, and just for good measure you install a PC complete with EMEIC (oops maybe I shouldn't have said that). (It's OK, your legal Editor.)

As soon as the comms went up the EMEFIX's started coming in thick and fast. Radios, generators, air conditioners all took their turn in playing up. On the whole, during the six weeks of the exercise the workload was fairly steady and predictable. 301 Fd Wksp and HQ 7MD Log Coy Wksp helped out whenever required.

On the other side of defence, the time-off in the Top End was great. Kakadu was spectacular, Litchfield Park and the local springs were a close second. The city was a 20 minute walk, the Casino and Mindil Beach about 15 minutes stroll. Throw in a visit to the military museum, the free beach, the Crocodile Park, the excellent fishing spots and you've just about covered it all.

Yes it was hard to take but somebody had to do it. After all it's the luck of the draw as we could have ended up in a dust bowl a few clicks away from Katherine.

The drive back was much the same as on the way up. Another F1 and a Series III died but the rest of the repairs were routine.

And now it's back in Melbourne, back in "the weather" and back to the same old routine. All that remains to show for the exercise is good memories, a suntan, some photos and a full crock park. Oh yes, there is the 100% stocktake to look forward to over the next few weeks.

Well there you have it Ed. It was a good and reasonably hard exercise. When is the next one?

Many regards from CAPT Horvat and the RAEME, RASIGS, RAAOC and RAE members of 2 Sig Regt Wksp.

B. Horvat
Capt
OC WKSP

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AUSTRALIA DAY HONOURS

Congratulations to WO1 A R KELB OAM of 2 Base Workshop Battalion for being awarded the Medal of the Order of Australia in recognition of his work at the Army Apprentices School

CRAFTSMEN OF THE YEAR - 1989

Congratulations to the ARA and ARES winners.

National ARA Craftsman of the Year - LCPL C R Chartres, 16 AD Regt Wksp

National ARES Craftsman of the Year - CPL R D Austin, 111 Fd Wksp

Regional Winners

1 MD ARA LCPL P V Williams, 1 Base Wksp Bn

1 MD ARES NO AWARD

2 MD ARA LCPL S J Nitschke, Sydney Wksp Coy

2 MD ARES CPL R D Austin, 111 Fd Wksp

3MD ARA CPL C V Diaz, Broadmeadows Log Bn

3 MD ARES CFN E A Cilia, 105 Fd Wksp

4 MD ARA LCPL C R Chartres, 16 AD Regt Wksp

4 MD ARES CFN I A Mathison, 3/9 SAMR

5 MD ARA LCPL G W Wood, 22 Const Sqn Wksp

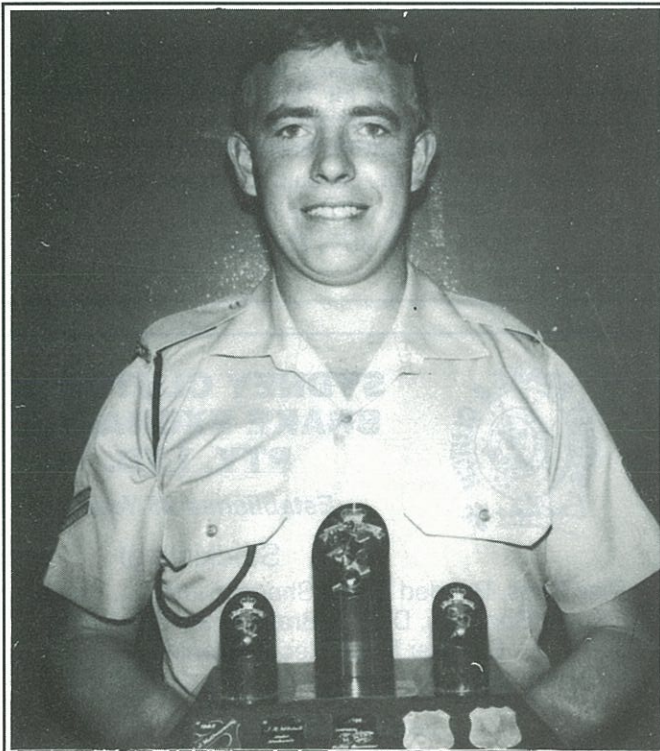
5 MD ARES CFN P A Johnston, 113 Fd Wksp

6 MD ARA CPL M E Young, Hobart Log Coy

6 MD ARES CFN R Hieden, FRG 301 Fd Wksp

7 MD ARA CFN A Johnstone, Log Coy 7 MD

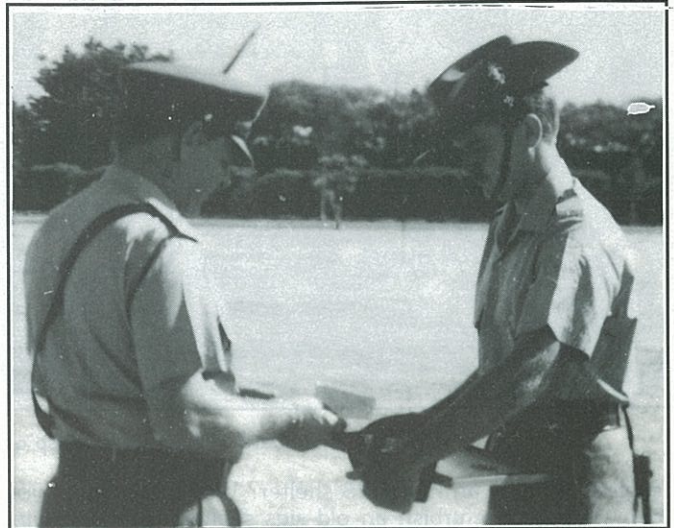
Craftsman of the Year Awards are made in accordance with RAEME Corps Instruction No 17, a copy of which should be held by every RAEME unit. National Craftsmen of the Year received a framed certificate and a prize to the value of \$250. Regional winners receive a prize to the value of \$100. (Editor)



CPL Nitschke

2MD ARA CRAFTSMAN OF THE YEAR

CPL Nitschke was posted to Sydney Workshop Company on the 9 April 1986 as a Radar Mechanic. CPL Nitschke is currently studying for a degree in Electrical Engineering at the University of Technology, Sydney. He is not only an exceptional tradesman but a keen and noted sportsman. CPL Nitschke has represented the Army in Interservice competition Australian Rules Football. He also went on to be selected to represent the National Tri Service team.



LCPL P J Williams receives his award from LTCOL G Grant, CO 1 Base Wksp Bn.

1MD ARA CRAFTSMAN OF THE YEAR 1989

The 1st Military District and 1 Base Wksp Bn ARA Craftsman of the Year for 1989 is 454926 LCPL P J Williams. Lance Corporal Williams enlisted in the ARA at age 28 years on 4 August 1987 as a civilian qualified tradesman. After completing basic training at Kapooka he was posted to 1 Base Workshop Battalion in October 1987. His maturity and trade skills have stood him in good stead establishing him as a potential leader from day one. After only eighteen months LCPL Williams, then a Craftsman, was appointed as Section Leader of the Machine Shop for six weeks. In recognition of his abilities he was nominated as his platoon representative in the Craftsman of the Year Award for 1988.

Married with two sons, aged 5 years and 3 years, LCPL Williams enjoys social golf and time with his family. He also likes rifle shooting and is a member of the 1 Base Workshop Rifle Shooting team through which he gained his applied marksmen award at the Australian Army Skill At Arms Meeting 1989. In 1988 some officers formed a small group to assist the Technical Aid for the Disabled Scheme. LCPL Williams was the first OR to join this group. Not content with this involvement in community affairs LCPL Williams was also elected to the Committee of his RSL Club.

What makes LCPL Williams worthy of the Craftsman of the Year Award? It is not just the exceptionally high levels of competence, leadership and community involvement he displays, but the speed with which he has established these standards. In a mere two years he has moved house, family and career across three states, re-established himself as an active community member and valued worker in 1 Base Workshop.

ARA NATIONAL AND 4 MD CRAFTSMAN OF THE YEAR



LCPL Craig Charters with one of the many weapons he is responsible for, chats with BRIG R M Millar ADC.

ARA NATIONAL AND 4MD CRAFTSMAN OF THE YEAR 453048 LCPL C R CHARTERS

LCPL Craig Charters was presented with the ARA National and 4 MD Craftsman of the Year awards by the DGEME, BRIG Millar, at a gathering of ARA and ARES personnel at Warradale Barracks on 21 Nov 89.

LCPL Charters graduated from AAS in December 1983 as a Fitter and Turner and, following postings to Adelaide Workshop Company and Singleton Workshop Platoon, was posted to the 16th Air Defence Regiment Workshop in January 1989. As the sole Fitter Armament, he is responsible for over 500 weapons; in his 'spare' moments he finds time to assist his work mates in any one of a myriad of tasks from welding to generator repairs. His enthusiastic nature, coupled with his exemplary standard of trade and military skills has earned him the respect of the members of his unit.

The Commanding Officer of 16th Air Defence Regiment, Lieutenant Colonel A G Warner, highlighted LCPL Charters' ability to work easily with different sub-units in a wide variety of circumstances and locations thus making a valuable contribution to the effectiveness of the Regiment.

LCPL Charters is a keen sportsman who represented 4 MD in the 1989 Interservice Soccer competition and went on to captain the Army National Soccer team in the 1989 National competition. The awards are just recognition of an outstanding soldier and a fine ambassador of our Corps.

3MD ARMY RESERVE CRAFTSMAN OF THE YEAR 3205892 CFN NOEL CILIA, 105 FIELD WORKSHOP

CFN Cilia joined 105 Field Workshop on 13 Jun 87 and quickly assimilated to the Army Reserve life. He was recognised as a Fitter Armament due to his civilian qualification and has since qualified as a Fitter Armament ECN 146-2. He has additionally attended equipment courses in order to enhance the knowledge of his military trade.

His commitment to the Army is as high as can be expected and is reflected in his attendance at nearly all unit activities

throughout the year. His readiness to participate in any social activity as either participant or staff, for the good of the unit or Army as a whole, is a demonstration of his commitment to the Service. His contribution included participation in the Bicentennial Military Tattoo and the Third Division Military Skills Competition.

CFN Cilia is highly thought of by all Unit members and is respected for his professionalism in both military and technical aspects.

5MD CRAFTSMAN OF THE YEAR LCPL WOOD

The winner of the 5MD ARA Craftsman of the Year Award was LCPL Wood. As part of the 22 Construction Squadron Workshop, LCPL Wood has been an important member of a team coping with the problems of supporting and maintaining equipment over the vast area of Western Australia. The demands of his job require resourcefulness, commonsense and initiative.

LCPL Wood's skills were tested to the limit during EX K89. 22 Const Squadron participated in K89 from 22 Jun to 30 Sep and was based 5 km south east of Katherine, NT. In addition to supporting the Squadron the Wksp provided spt to HQ 1 Const Regt, 15 MP PL and 2 Sig Regt. This heavy workload placed great demands on the junior ranks as the heat took its toll on both man and machine. Although he did have to be reminded that the best container to store oil in was one with a bottom, LCPL Wood maintained high standards in both trade and military skills performing his duties in a professional manner.

LCPL Wood enlisted on 9 October 1984 as a mechanic where he was posted to NQ Workshop before moving to 22 Const Sqn Wksp. He has been an active committee member of the Sandgroper Club, and also part of the team behind the Wksp entry into the Redex Variety Club Bash, this year restoring a 1965 Mercedes 220.

An enthusiastic and mature tradesman, he is always willing to help the younger members of the unit, and we wish him well in any future undertakings.



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Technical Squadron 1st Armoured Regiment



The 1st Australian Armoured Car Squadron was formed on the 21st January 1946 at Puckapunyal to serve with the Occupational Forces in Japan. It sailed from Sydney on the 12 April 1946.

For the next three years the unit performed normal occupational duties which included guards on the Imperial Palace of Tokyo and extensive patrolling on the island of Shikoku. The unit then embarked for Australia on the 18th December 1948.

On the 7th July 1949 at Puckapunyal, the 1st Australian Armoured Car Squadron was renamed the 1st Armoured Regiment.

When the 1st Australian Armoured Car Squadron was formed, a Light Aid Detachment (LAD) was also raised. This was known as the 348 Light Aid Detachment and it accompanied the 1st Australian Armoured Car Squadron to Japan. For the next three years the LAD was responsible for the repair and recovery of the Staghound Armoured Cars and Canadian Scout Cars belonging to the Squadron. Unfortunately on its return to Australia the 348 LAD was relocated at Mob Siding, Seymour and renamed the 36 Light Aid Detachment.

On the 30th June 1951 whilst still located at Mob Siding, the LAD was once again redesignated to become the 1st Armoured Regiment Light Aid Detachment. This day is now celebrated as the Squadron Birthday.

In 1953 the LAD was relocated to Puckapunyal where it rejoined the parent unit, the 1st Armoured Regiment. The LAD was now responsible for the repair and recovery of the Centurion Tanks that were introduced in the beginning of 1952.

From 1967 to 1971 a detachment from the LAD served with a squadron in Vietnam. Throughout this period the LAD was responsible for the recovery and repair of the

Centurion Tanks and M113's that became bogged in the paddy fields or damaged in enemy action. In 1968 an ARV serving with B Sqn was on a recovery task. The ARV was fired upon by the enemy and he returned fire. This commenced a costly operation for the enemy, the Battle of Binh Ba.

During the Vietnam conflict the LAD served with distinction and showed that no job was too difficult.

After the Vietnam Conflict the 1st Armoured Regiment continued to train on an off the Puckapunyal Training Area. In December 1974 the LAD underwent another name change to Technical Support Squadron.

In 1977 the Centurion Tank began to be phased out. These were replaced by the German Leopard ASA1 MBT, which is currently in service today. Much training was then undertaken by Technical Support Squadron to enable their personnel to repair the Leopard family of vehicles.

In February 1987 another name change occurred. Technical Support Squadron became Technical Squadron, which we are known as today.

On the 30th June 1991 it will be Technical Squadron's 40th birthday. It is planned that a Reunion will take place at the 1st Armoured Regiment Barracks for all past and present members. The Reunion will be held on Friday 28th June 1991 and finish with a family open day on 29th June 1991. Those people interested should contact WO1 John Pheonix (057) 93 7070 or DNATS 8-56-7070. Or write to:

**WO1 John Pheonix
1st Armoured Regiment
Technical Squadron
Puckapunyal Vic 3662**

EXERCISE BLUEBELL TREK 89

By Lt Col Bryan Coolahan

Exercise Bluebell Trek 89, an adventurous training activity in Far North Queensland by member of RAEME from the First Division.

Corporal Peter Liefertink from 102 Field Workshop and Lance Corporal Bob Murch also from 102 Field Workshop but now a Corporal at 4 Field Regiment Tech Support Sub-Unit met up with the CDEME 1 Div, Lieutenant Colonel Bryan Coolahan, at Cairns in November 1989 to commence a walk along the first sector of the Bicentennial National Trail from Cooktown to Mossman.

The Bicentennial National Trail (BNT) is the longest horse-riding and hiking trail in the world. It is over 5000km in length and commences at Cooktown in FNQ and concludes near Melbourne in Victoria. Its inception is the result of over sixteen years work by Australian bushmen and follows the routes, wherever possible, used by pioneers and early settlers, and incorporates significant historic sites. The trail generally follows the Great Australian Dividing Range.

In FNQ the trail picks up the routes used to get from the coastal ports of Cooktown and Port Douglas, across the Divide, to the early gold fields of the Palmer River, "the River of Gold." Some of these routes were blazed by white-men and others followed aboriginal walking tracks.

The trail also incorporates the development necessary to furnish FNQ with electricity in more recent years by picking up the Cooktown Region Electricity Board (CREB) powerline maintenance tracks where appropriate. These tracks, which were for years the mainstay of road communication in FNQ, are strictly four wheel drive dry weather tracks. In any event these trails are tough going even today and particularly on foot.

Our drivers, Privates Chris Harper and Wayne Atkinson took us to Cooktown where we spent a few hours being diligent tourists and then they dropped us at Helensvale to commence our walk. Arrangements were made for Chris to collect us from outside Mossman seven days later. 130km in seven days! Hardly a challenge! Well that is what we thought also.

Helensvale has only two buildings, a kitchen and a pub, 400 metres apart. We figured we had enough food so we checked out the pub. The Lions Den Hotel is functional; it is constructed from solid timber and corrugated iron sheeting; it is designed to survive its patrons. The clientele, other than the occasional tourist, have two things in common, they are tough and they come to drink hard and the pub is built accordingly.

We set out from The Lions Den suitably refreshed for an afternoon's walk and followed Wallaby Creek (Mululuban) to the South toward Rossville, pausing at every opportunity to drink from the creek as it was hot and humid and we were sweating profusely from the climate, the walk and from the seven days provisions we were carrying.

At Rossville we were offered some homemade brew by a feral whiteman; however we saw how he lived and his appearance so we declined in the interests of our health in general, and our livers and brain cells in particular. We did see some nicer folk in Rossville.

The track then climbed up to the Cedar Bay National Park where we were in the shadow of the 1148m feature

of Mt Finnigan. The descent from the Mt Finnigan/Mt Finlay saddle was a steel single lane track with the pleasant sounds of Gap Creek tumbling alongside us to the East. We called it a day some 16km from the Lions Den and camped by the plentiful water supply of Gap Creek and re-hydrated our bodies.

Early the following morning we continued the descent from the Cedar Bay National Park to Wyalla Plain, a hot and dry approach to the village of Ayton. We met up with a delightful local couple, Rob and Ruth, whom we surmised to be remnants of the hippie drop out groups of the sixties.

They were articulate and vibrant in their love for this region, and were genuinely pleased to see us walking their patch. They gave us some advice on good camping areas and availability of water and some places to see which they asked us not to divulge, a delightful encounter.

We detoured to visit Weary Bay, a five km stretch of sandy beach, but not a suitable place to camp due to the scarcity of water. Here we met a couple of squatters living in a small garden shed on the edge of the beach. They generously shared their meagre water supply with us and also gave valuable advice of the trek ahead of us, particularly in relation as to where we were likely to get shot at by "minders" protecting mining and other interests where visitors were not encouraged. The walk now took on a new perspective, our previous concerns had merely been crocodiles, wild boars, ticks, leeches, venomous snakes and stinging trees.

We passed through Ayton (a small shop, a wilderness "resort" for back-packers and a general store.) A passing observation on "back-packers"; these appear to be youth on social service payments who carry designer coloured back-packs between air conditioned buses and low budget accommodation and who "do" the country at 80 kph. We asked why nobody wore walking boots like we did but there was some reluctance to respond.

We continued along the Bloomfield River (Banner Yearie) toward the Bloomfield Mission which is the home of the Wujul Wujul community. This community runs a successful cattle business and craft and artifact shops. We halted for the evening at Granite Creek which is an occasional meeting place for the local aborigines. A group of women, girls and young children came and fished early in the evening, there appeared to be more laughter, games

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and stone throwing than serious fishing.

The next day we headed up the CREB track away from Bloomfield and climbed steadily toward a feature known locally as "The Jump Up" as it is 291 metres above the valley. At this stage we were out in the open forest and the country was used for cattle grazing. We passed the turnoff to Ten Mile Station and also passed directly by Dawnvale Station and re-entered the rain forest to descend toward Keating Creek. We came across a Bush Turkey nest which was a mound some 4 metres in diameter and a metre high. The forest then opened up to normal bush with hundreds of blackboy plants among the eucalypts and in Keating Creek thousands of tadpoles spawning into frogs without any apparent predator. We crossed Keating Creek twice on our descent to Baird Creek our home for that evening.

From Baird Creek we were to follow an ancient aboriginal walking trail from the sacred site of Roaring Meg Falls to the Daintree River headwaters. This commenced with a steep ascent of 250 metres to the summit of Gold Hill up into the McDowall Range. En route we passed a squatters hut in the foothills, nobody was home but the two inch link chain attached to the dog kennel would have given a rise of blood to a Recovery mechanic and certainly gave us cause for some speculation as to the size of the dog.

We progressed through the rain forest along the McDowall Range and passed the entrance to the Enterprise Gold Mine where mercifully we were not shot at (perhaps it was Social Security payment day.) At one stage we encountered a wild boar and the four of us scattered until his presence was no longer noted.

We continued South following our track notes and became geographically disoriented, so we discarded the notes and followed our 1:50,000 map and after progressing 100m in 15 minutes through primary rainforest we worked our way back up to the ridges. We continued our way to Devil Devil Creek our night location and passed yet another mining claim with a pathetic humpy.

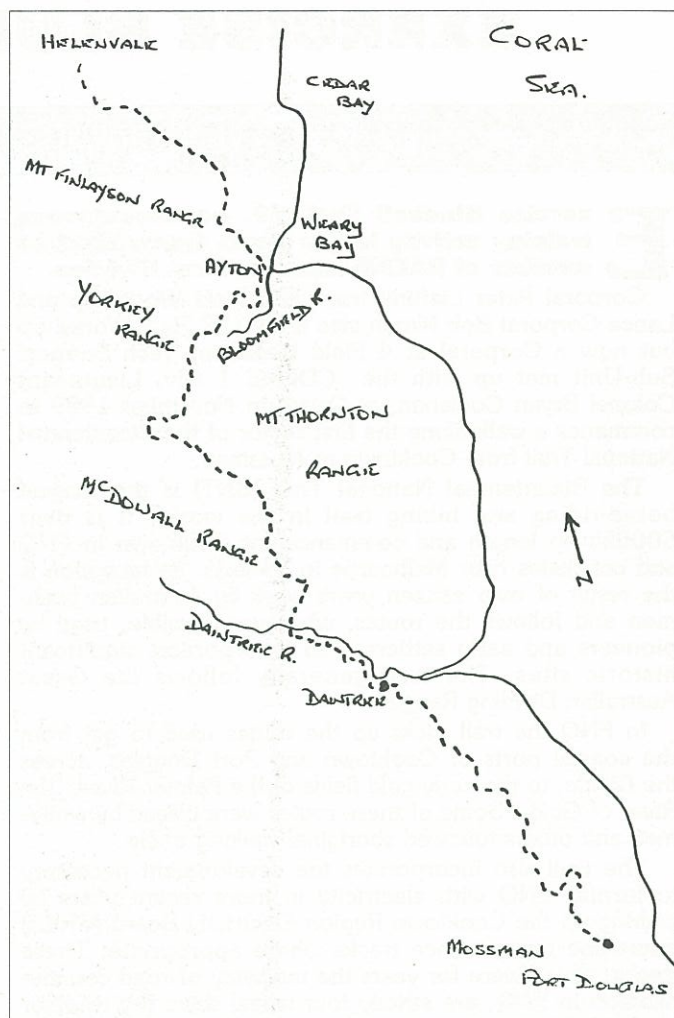
This made us wonder what sort of standards some people have, to be prepared to exist in such squalor. In this case the existence was obviously supplemented, as evidenced by the considerable quantity of drip feed irrigation hose; the presence and location of which has subsequently been reported to authorities.

Devil Devil Creek provided a ration supplement to the dehydrated and freeze dried rations we had consumed to date. A slow moving tortoise was quickly despatched to the coals to provide a distraction from the daily fare.

The following day saw yet another aberration from the track notes as we made our way in the "wrong" direction to establish a fix on our location. Finally we opted to head for the CREB track as the route we wished to use had become overgrown. This added a considerable distance to our planned way and also brought us back in contact with civilisation as we met the Sunday drivers and bikers out for their weekly excursions.

They were friendly enough citizens but it was a little disconcerting to know they were going to drive/ride and return in less than a day to a place we left three days beforehand. Later in the day when one of the trail bike riders asked if we had any eye-drops to ease the dust in his eyes. We, who had been showered with their dust, just smiled and said no, we just couldn't find room in our packs for that sort of item.

Our trek continued to the Daintree River, which we crossed without being molested by crocodiles, and subsequently to the Daintree village which provided a welcome resupply of adhesive plaster for our many blisters. Our



night was spent in the luxury accommodation of the Daintree showground where the porcelain toilet was appreciated.

The next day could really be considered a short rest day as we had a leisurely wander up the Stewarts Creek valley and were distracted for an hour or so at a coffee plantation before arriving at our camp location for a half day of washing and personal administration. Some small black bream were liberated from Stewarts Creek and served raw with the juice of some limes found in an abandoned farm house garden, a welcome supplement to the diet.

The last day of the walk commenced with a character forming climb, better described as a crawl, up the face of an overgrown escarpment on one's hands and knees for half an hour before pausing to remove the leeches and a well deserved drink of water. We then re-entered the rainforest and descended slowly for the remainder of the day into the Whyanbeel Valley just north of Mossman. Here we met up with our transport an hour or so earlier than planned, not a bad time and space appreciation over 130km in seven days.

All in all, a pretty good event. The quote of the trip? An Aboriginal woman on hearing where we had walked from (on an ancient aboriginal trail) "What, couldn't youse get a lift?" The major achievement of the trip? Getting off our butts and doing it.

(Lt Col Bryan Coolahan has left the Army after nearly 25 years service. 1989 was a good year to go out on - K89 immediately followed by Ex Bluebell Trek 89. Thanks Bryan. Ed.)

TACTICAL COMMAND, CONTROL AND INFORMATION SYSTEM FOR THE AUSTRALIAN ARMY

ABSTRACT

Australia's position in the South East Asian region is unique and the area of direct military interest, ie areas from which potentially unfriendly nations could harass Australia and its Territories, is large. The large distances between Australia and its Allies and a realistic understanding of Allied response times, necessitates that the Australian Defence Force develop and maintain sufficient capability to meet perceived threats from within its own resources. The Australian Army has embarked upon a program for the development and implementation of an automated Tactical Command, Control and Information System (TCCIS). The objective of the TCCIS is to provide efficient information handling in support of operations and will serve Commanders and staff well into the 21st century.

1 Introduction

The Australian Army has been preparing now for a period of 10 years for the introduction of a Tactical command, Control and Information System (TCCIS). The objective of the TCCIS is to provide efficient information handling in support of operations and will serve Commanders and staff well into the 21st century.

In common with many other Armies, the TCCIS model defines a multi-user system, consisting of three core functions; command, co-ordination and execution. The model is applicable to tactical headquarters at any level in the command hierarchy. The first core function, command, represents the Commander. The second, co-ordination, is represented by the general NATO model, consisting of five sub-systems; Operations, Intelligence, Fire Support, Combat Service Support and Air Defence/Air Space Control. The third, execution, represents those elements, each of which have a particular expertise, that are sources of data to and carry out orders from the co-ordination elements. These are known as "specialist" Command Support Systems (CSS).

The development of TCCIS has highlighted the problems found with the acquisition, standardization and interconnection of equipments procured through different Capital Equipment Procurement projects. Also, the effects of a quickly advancing information technology, combined with the possibility that some of the systems that form the TCCIS will be sourced from overseas, has increased the risks associated with the TCCIS program.

The introduction of a TCCIS for the Australian Army will change the method of operation of the headquarters at all levels of the land forces. No longer will the headquarters be primarily based upon manual systems for operation but will incorporate a level of automation. This paper details the TCCIS implementation status and describes several of the key areas concerning acquisition, standardization and interconnection of equipments procured through different Capital Equipment Procurement Projects. The communication systems to be used by the TCCIS will be

By Major Michael Yates
Royal Australian Corps of Signals
Captain Mark A Gregory,
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Major Michael Yates, DipEng (Comms) and BE(Elec) RMIT, Melbourne, 1979.
Captain Mark Gregory, Student member IEEE, BRE(Elect)(Hon), UNSW, Canberra, 1984.

discussed to provide an insight into their capabilities. Army has several activities planned to provide data flow information that should provide a better insight into the standardization and interconnection requirements. The direction being taken by Army to provide a suitable system support facility for the TCCIS is discussed. Finally the implications of the TCCIS upon the Australian Government's goal of achieving a greater level of Defence industry self-reliance are analysed.

The program was commenced over a decade ago. With the introduction or imminent introduction of several of the TCCIS systems, the members involved with the projects over the years are now able to begin to see the results of their efforts.

2 Technology Developments

The modern battlefield is considered to be an increasingly difficult environment for Commanders and staff to maintain control of their forces and make timely decisions. Greater troop mobility has increased the size of the Commander's immediate battlefield. The increasing complexity of equipments necessitates administrative and logistic support throughout the battlefield. The cost and subsequent scarcity of modern weapon systems on the battlefield places pressure on the Commander to maximise the use of the weapon systems. Also the information flow throughout the battlefield has increased substantially and has created the need for automated information management systems to aid the Commander and staff in the daily operation of headquarters and support the decision making process. The TCCIS concept has evolved based upon the fundamental requirement that headquarters must be able to continue operating as an entity in the event that communications between headquarters fail. Therefore elements

within headquarters that form a functional area are being provided with their own information base, however, they will be capable of operation without this.

Inherent to this concept is the need for adequate interoperability and security, however, technology has only recently provided the means to even begin to consider these issues. Four key areas that will be affected by information system technology developments are:

1. Standards
2. Security
3. Interoperability with higher and joint headquarters
4. Allied/ABCA interoperability

2.1 Standards

Army policy is that the means of information exchange between command support systems within the TCCIS shall be controlled by standards applicable to the International Standards Organisation (ISO) Reference Model (ISO/RM) for Open System Interconnection (OSI). The term Open System Interconnection qualifies standards for the exchange of information among systems which are "open" to one another for this purpose by virtue of their mutual use of the appropriate standards. Where ISO standards have not yet been developed, specific industry standards will be nominated, eg Standard Query Language has been nominated for the Australian Army Tactical Command Support System (AUSTACCS) applications.

The reference model on which the standards required within the TCCIS for exchange of information between automated systems is to be based upon the ISO/RM (ISO IS 7498). The Reference Model, however, must be amended to include the additions necessary to cope with requirements which stem from the deployment of systems within Army. Within the TCCIS, the approach taken to limit the technical risk involved with the achievement of the required degree of interoperability is by the adoption of a path-finding project, AUSTACCS, which will prove the concepts and identify the standards to be set by Army for subsequent projects. The set of Australian military standards which regulate the services and protocols required for the exchange of information between automated systems and which are based on the ISO/RM are not expected to be completed until 1992 at the earliest. To achieve

the highest level of interoperability between systems prior to 1992, Army has adopted an interim strategy based upon commercial industrial standards that are considered to offer the least risk.

2.2 Security

The TCCIS will require a multi-level security system to fulfil its operational requirement. However, due to the early stage of development of this technology, a system high security regime will be implemented with the capability to upgrade to a multi-level security system at a later time. The TCCIS will therefore operate in a system high security mode of SECRET. That is, all system elements and information handled by the system will be protected at SECRET level and all users will be cleared to SECRET. Although cleared to SECRET some users may not have a "need-to-know" requirement for some of the information contained in the system.

2.3 Interoperability with Higher and Joint Headquarters

Communications with higher and joint headquarters will be via the PARAKEET/DISCON networks. Information will be exchanged using Australian Defence Format Messages (ADFORMS) messages or designated communication message formats, including ACP 128, ACP 127, free text, exchange of magnetic media and telephone.

2.4 Allied/ABCA Interoperability

The American, British, Canadian and Australian (ABCA) Armies have agreed to the definition of various degrees of interoperability in order to define how information can be exchanged between different computer systems. To achieve the integration required for computer-based systems within the TCCIS, it will be necessary for these systems to interoperate at the highest level. This means that computer systems should be able to treat each other as though they were a part of a homogeneous system. Restrictions on such interaction should only be for security purposes, and this is the ABCA Armies agreed interoperability objective.

3 Proposed TCCIS Solution

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TCCIS. AUSTACCS is a secure computer based CSS designed to assist a Commander with information management both in the field and in barracks. AUSTACCS incorporates the computing equipment and software. Local area communications are integral to AUSTACCS, while wide area communications will be provided by Army communications bearer systems, with interfaces into the Defence communications systems. AUSTACCS will provide the command and co-ordination functions of the TCCIS model and allow for the interconnection with the specialist CSS.

Communication bearers for the TCCIS will be provided by the Single Channel Combat Net Radio (RAVEN), Multi-Channel Tactical Trunk Network (PARAKEET) and Defence Integrated Secure Communications Network (DISCON).

4 Australian Army Tactical Command Support System (AUSTACCS)

Project AUSTACCS provides for the development and acquisition of an automated CSS for the Land Force of the Australian Army. AUSTACCS, along with the communications facilities being provided by Projects RAVEN and PARAKEET, will form the basis of Army's TCCIS, providing commanders and staff with a more effective means to command and control assigned forces through the introduction of automated (electronic) information processing within and between headquarters.

AUSTACCS will provide the principal CSS for Army's Land Force headquarters and for the 1st Australian Division. It will also provide the infrastructure for up to 43 specialist tactical CSS that could be developed by Army. These include the Electronic Warfare Command and Processing Sub-System and Field Artillery Computerised Control System.

4.1 History

AUSTACCS had its genesis in South Vietnam in 1971 when a trial was conducted by the 1st Australian Task Force to determine if a computer could be used to store and retrieve intelligence information. Encouraged by the success of the trial, the Defence Science and Technology Organisation in Salisbury, South Australia, was tasked with conducting a series of studies to analyse the operations and intelligence functions of command and control. These studies demonstrated the potential advantages of adopting an integrated automated approach to the information management and decision support functions and led to the commencement of project definition studies for Project AUSTACCS. Then in November 1983, Thorn EMI Electronics Australia Pty Limited, with Software Sciences Limited of the United Kingdom as the principal sub-contractor, was awarded the AUSTACCS Phase 1 contract. The purpose of this contract was to establish a Test Bed facility next to the headquarters of the 1st Australian Division, at Enoggera Barracks in Queensland, and to develop user requirements and software techniques for the Operations and Intelligence Sub-Systems.

In February 1986, Thorn was again successful in its bid for the AUSTACCS Phase 2 contract. This provided for

the expansion of the Test Bed facility, the development of user requirements for the three remaining sub-systems (Fire Support, Air Defence and Air Space Control and Combat Service Support), further development of the Operations and Intelligence sub-Systems and the production of the final System Requirements Studies.

Completed in 1988, the Final System Requirements Studies was augmented by a number of studies aimed at gaining wider industry involvement in the project and addressing specific problem areas identified during Phase 2. The total package was then used to prepare the Development Specification (DD(X)) for the final AUSTACCS system. It is anticipated that the Request for Tender for the development and acquisition of the final system will be released by mid 1989 and that a contract will be awarded by April 1990. Project AUSTACCS is expected to be fully operational by 1999.

The final development, acquisition and introduction into service of Project AUSTACCS is planned to commence in 1990 and will extend over a period of almost eight years. The acquisition phase (Phase 3) will consist of three sub-phases:

1. Phase 3.1 will provide for the establishment of an AUSTACCS Technical Facility at the Engineering Development Establishment Maribyrnong, Victoria, and an AUSTACCS User Facility (AUF) at Enoggera, Queensland. Also a design study and design trial will be conducted to confirm that the selected solution can be correctly implemented.

Software development will include most of the common and some of the specialist software and the fielding of an initial basis system. This sub-phase is expected to take four years to complete.

2. Phase 3.2 will provide for the completion of common software development, further development of specialist software and the purchase of sufficient hardware to fully equip the entire user community. This sub-phase is expected to take three and a half years to complete.

3. Phase 3.3 allows for the development of the remaining specialist software and for the modification of software delivered during Phases 3.1 and 3.2. This sub-phase is expected to take two years to complete.

4.2 Capability

AUSTACCS will be a message based system. Information entered into a Hand Held Terminal or a unit-level workstation will be formatted, then transmitted through the communications network to workstations at either Brigade, Division or Land Headquarters. Communication will be possible either vertically or laterally within the Army hierarchy. Once received, messages will be read, actioned, stored temporarily or used to update a database. A possible deployment scenario which indicates the extent of AUSTACCS is shown in Figure 1.

Each computer workstation will have access to a common set of tools or applications which will assist the staff officer by automating many of the functions regularly per-

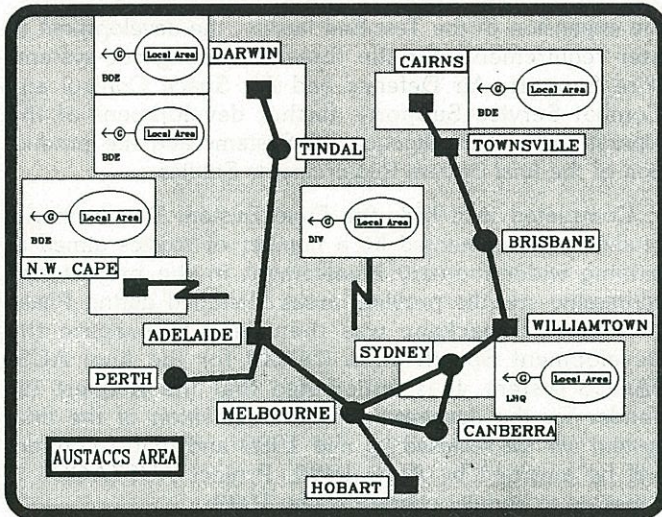


Figure 1 AUSTACCS Wide Area

formed in the command post. Facilities to be provided include:

1. the processing, printing and distribution of documents, orders and instructions;
2. file storage, search and retrieval;
- 3 a spreadsheet for the construction of Staff Tables;
4. diary and reminder capabilities'

5. business graphics capabilities;
6. a dynamic digital clock display;
7. resource scheduling capabilities;
8. schedules message monitoring; and
9. a text worksheet capability including:
 - a. appreciation formats for the assessing of alternative courses,
 - b. grouping and locstat boards,
 - c. airstate boards,
 - d. intelligence collection plans,
 - e. communications state boards, and
 - f. activity monitoring boards.

Where possible, commercial off-the-shelf software will be adapted for use with each of the above applications.

In addition, each workstation will have access to specialist applications specific to the functional area in which the workstation is used. Examples of specialist applications for sub-system facilities include:

1. Group Tables,
2. Dumping Calculations,
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4. Staff Tables,
5. Fire Plans,
6. Air Movement Tables, and
7. Terrain Analysis.

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The high resolution, high performance digital map display, which will be a feature of the Battlemap Workstations, is likely to be based upon the AUSTACCS Tactical Electronic Office concept, utilising Graphic Information System Tool, which will consist of a spatial database which will be used to depict contours, spot heights, roads, rivers, man-made features and vegetation. It will also provide the foundation for the battlemap graphics display, incorporating features such as pan and zoom facilities, map interrogation and a hard copy print-out.

Maximum use will also be made of window techniques to simultaneously display multiple screens. Likewise, icons will be used extensively to facilitate selection of various screen functions.

4.3 Implementation

AUSTACCS is being developed to conform with the ABCA Armies Quadripartite Objective 7-9A in that it will combine into one secure system the following five sub-systems:

1. Operations,
2. Intelligence,
3. Fire Support,
4. Air Defence and Airspace Control, and
5. Combat Service Support.

The command and control hierarchy is depicted in Figure 2, which highlights the command relationship to be maintained in AUSTACCS.

The following major items of equipment will be provided in AUSTACCS:

1. Hand Held Terminal for use at unit and sub-unit level;
2. Unit Level Workstations, which will provide text processing at Brigade, Division and Land Headquarters; and
4. Battlemap Workstations which will provide high resolution, high performance digital map displays in selected areas of Brigade, Division and Land Headquarters.

In addition there will be printers, plotters, file servers and communications gateways to support the various workstations at each headquarters. Local Area Networks at Brigade, Division and Land Headquarters will interconnect all workstations and ancillaries within a particular functional area. Gateways will interconnect these functional areas with the wide area communications facilities being provided by Projects PARAKEET and DISCON. The HF and VHF radio resources being provided by Project RAVEN will be used to extend these facilities down to unit and sub-unit level.

As AUSTACCS will be used for training as well as for operations, a Local Area Network will be provided at each major headquarters to permit in-barracks use of the final operational system. These networks will be interconnected using the DEFCONNET secure ACP 127 network and the secure DISCON packet switched network, with the appropriate security restrictions on the information transmitted.

The exchange of data between functional areas will comply with the International Standards Organisation (ISO) Open Systems Interconnect (OSI) Reference Model.

5 Data Flow and Modelling

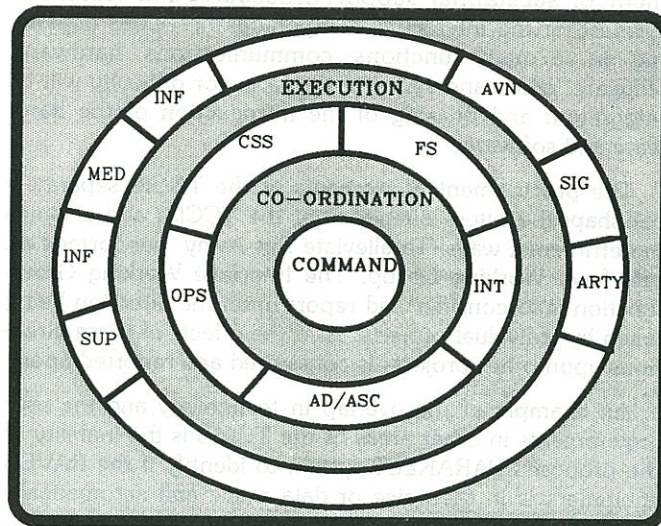


Figure 2 TCCIS Hierarchy

Using data flow information supplied by Project AUSTACCS and the communication bearers described above, Martin Marietta Information and Communication Systems completed a data flow analysis in August 1988. The results of the study were encouraging, yet highlighted the need for additional real data flow analysis and modelling to be carried out before conclusions are made.

Prior to the study, data flow analysis had been restricted to simulation and analysis of data flow measured during Army exercises. The results have been inconclusive. This is due to the difficulties of projecting the effects of an actual conflict upon data flow during exercises and the need to collect together sufficient military elements to allow for adequate measurements of the size and distribution of data generated.

One conclusion of the study was that DISCON and PARAKEET will provide adequate capacity and performance to meet AUSTACCS data flow requirements. However, the study indicated that RAVEN will provide a marginal capacity and performance resource for the AUSTACCS data flow requirements. Importantly, upon receipt of the results of this study, Army reviewed the source information and constraints provided to Martin Marietta and the effects upon the results of the study when the source information and constraints were modified. Army intends to carry out extensive data flow analysis of real traffic during a major exercise to be staged in late 1989. In addition to this the capability to perform computer simulations and system modelling is being developed. It is anticipated that Army will gain significantly from these developments.

A firm understanding of data flow requirements is crucial when considering the effects of the anticipated growth in data flow after the TCCIS is introduced into service.

6 SYSTEM SUPPORT FACILITIES

The move by the Australian Army from a completely manually operated headquarters to a headquarters with a level of information automation will require the development of substantial support procedures and facilities. Because of the interactive components of TCCIS depending on so many functions; communications, hardware, software, command systems, etc. a major difficulty will be integration and phasing of the introduction of the hardware and software.

The procurement of elements of the TCCIS separately can shape the future directions of the TCCIS, and at times in detrimental ways. To alleviate this Army has formed an Interface Working Group. The Interface Working Group function is to consider and report upon the direction being taken by individual projects. Also the effects of these directions upon other projects is considered and reported upon.

An example of the overlap in technology and the user requirements in other areas of the TCCIS is the inability of the proposed PARAKEET system to identify if the RAVEN equipment is in the voice or data mode and automatically process mode changes. This must be done manually. Technology availability is a function of the time that the technology is purchased. Projection and delay until suitable technology is available is one method of meeting the overall TCCIS requirements, yet may not meet the immediate operational needs of Army.

Current Army policy for the repair of high technology equipment is that the equipment will be maintained by module/assembly replacement as far forward as possible. Equipment not repairable will be returned to the Australian Support Area for repair by military or civilian workshop.

A system support facility for the TCCIS is planned. This facility will provide the in-service support for the TCCIS. Its establishment will provide the following capabilities:

1. Configuration Management Authority. This authority will provide the policy guidelines and infrastructure required to enable individual system configuration control boards to effectively manage individual systems and be a configuration control board for proposed changes which transcend single systems. Configuration management is a staff function that does not require access to system hard-

ware or software development tools. The Configuration Management Authority will be responsible to maintain the baseline configuration and baseline history.

2. Fleet Management Capability. Individual configuration control boards will be required to monitor and control quantities, location and modification status of every element of a system that is subject to configuration control, including supply and repair system holdings. In addition to modification control of hardware and software, fleet management includes configuration status control and reporting in support of individual configuration control board activities. Within the current Functional Command organisation within Army, overall fleet management responsibility should reside in the Logistic Command. Significant internal restructuring may be required before the Logistic Command can provide effective fleet management control over high population widely distributed equipment systems.

3. Hardware and Software Development and Test Capability. A number of current and proposed systems have "test beds" that can be used to develop and test software and hardware change proposals for consideration by the appropriate configuration control board. These proposals may result from investigation of failure encountered under field conditions or proposals for system enhancements and new capabilities submitted by the equipment sponsor.

4. Support to fielded systems for urgent operational software maintenance requirements.

5. Support for integration of communications and command support systems.

6. A reference network for testing application of standards and validating configurations of equipments.

7. Testing for security integrity.

8. Investigation and rectification of interoperability issues across the entire TCCIS, at a central location.

The system support facility will play a central and critical role in the integration and support of the in-service TCCIS. One approach being considered will optimise the return from the AUSTACCS development phase facilities. These facilities will be transformed into system support facilities after AUSTACCS is introduced into service.

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7 Defence Self-Reliance and the TCCIS

The Defence White Paper, [1], stated that the Government's policies included a priority for the development of self-reliance in the defence of Australia. The Government's policies include the development of a national infrastructure with fundamentals of appropriately sited bases, effective logistic arrangements, and the scientific and industrial ability to select, adapt, repair, maintain and develop defence equipment.

In accord with the intentions given in the Defence White Paper, recent contracts for Capital Equipment Procurement programs have been awarded with preference being given to proposals that result in an increase in Australian industry participation.

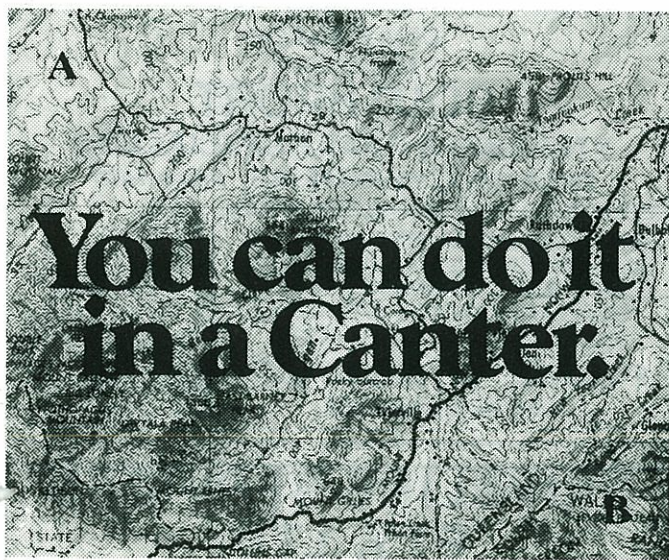
The TCCIS will provide the principal means for the Commander to manage information in the modern battlefield. The need for Australia to be completely self-reliant in the development and support of the TCCIS primarily because of the operational importance of the system should be self-evident.

The financial constraints placed upon the TCCIS projects has necessitated that maximum use be made of "off-the-shelf" hardware and software and a lowering of the environmental specification for the equipment that will be procured. Using commercially sourced hardware and software may remove the development risk and

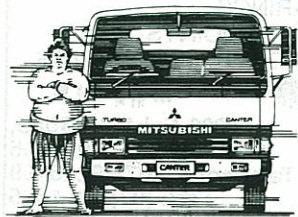
allow Army to buy the latest available technology but it may prevent Army from achieving the required level of self-reliance, first in support from within Army, and secondly in capability development within the Australian defence industries. However, all equipment suppliers will be required to provide data to prove to the Commonwealth that the equipment proposed will meet the operating requirements. The Commonwealth reserves the right to subject the equipment to environmental testing to verify suitability of the equipment. The environmental compromise is a direct result of the capital procurement cost of military specification high technology electronic equipments.

The Australian Army maintenance and repair policy is aimed at achieving system restoration as far forward as possible. However a balance has to be achieved that optimises the procurement cost with the in-service logistic support cost.

Financial pressure on AUSTACCS, the core element of the TCCIS is likely to result in most of the common software based functions being achieved through the use of "off-the-shelf" software packages. Thus we will not incur development costs for operating systems, graphic interface display standards and office automation packages including word processors, spreadsheets, and data bases. However, it is possible there may be interoperability problems between these and we will need access to the source code.



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8 Conclusion

To provide the user with the service expected the introduction of a real-time support mechanism for the TCCIS is required. This will involve the introduction of configuration management and adequate fleet management capability. A study undertaken to analyse the TCCIS data flow has highlighted the need for additional real data flow information to be gathered to permit further simulation and modelling.

The development of TCCIS for the Australian Army is a complex and costly undertaking. Within the Australian Government's policy of increased Defence self-reliance, Army is well on the way towards the final realisation of the TCCIS. With the final introduction of the system in 1999 the Australian Army will move into an era of information management automation. The TCCIS will assist Commanders and staff, at all levels, to make informed and timely decisions.

REFERENCES

[1] **The Defence of Australia 1987**, Australian Government Publishing Service, Canberra, 1987.

[2] Draft Defence Instruction, "Software Support for Sensitive US-Sourced Defence Computer Systems - Guidelines for Obtaining Appropriate Release and Access," 13 Feb 89

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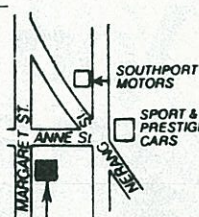
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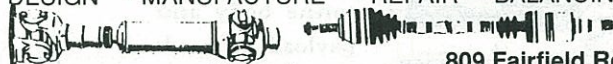
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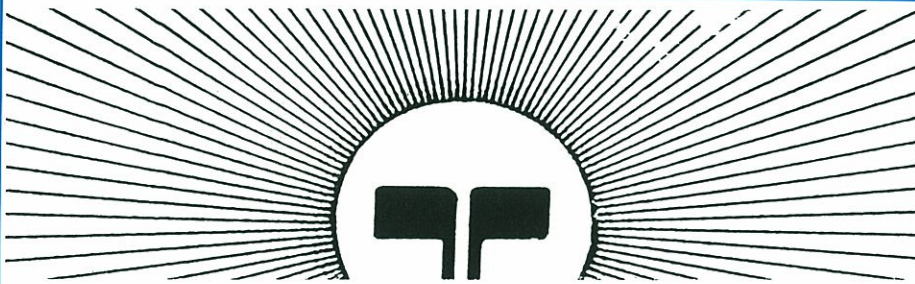
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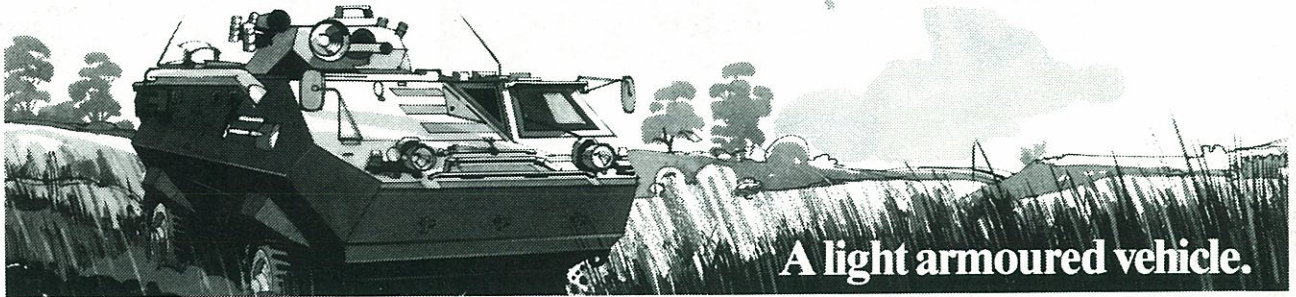
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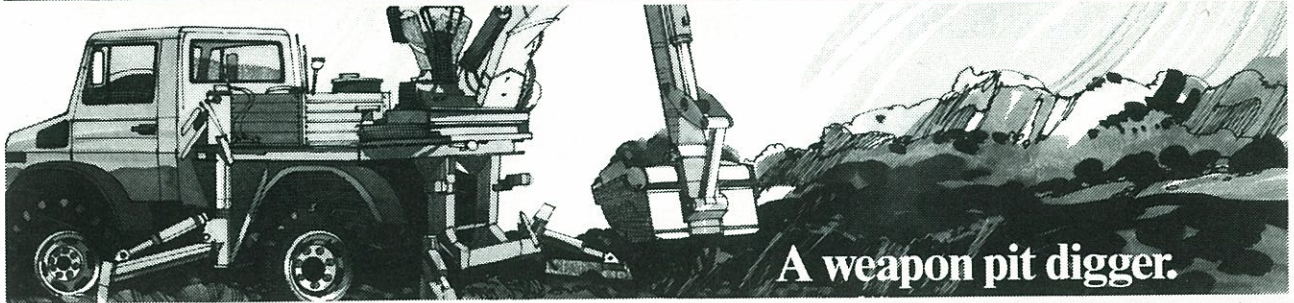
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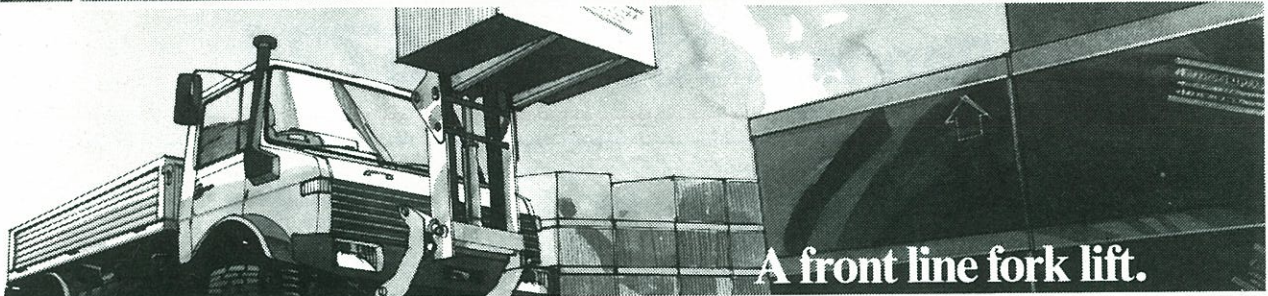
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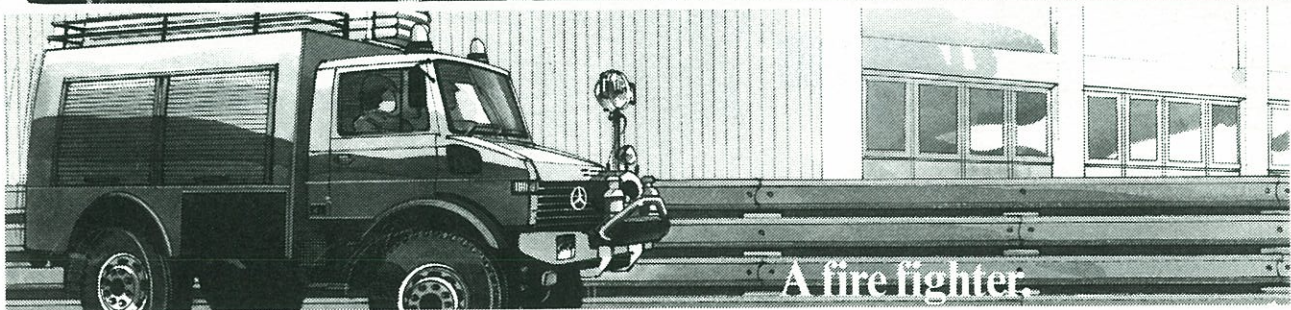
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A weapon pit digger.



A front line fork lift.



A fire fighter.

The unique Unimog has the special skills to provide invaluable support for every arm of the Australian Defence Forces.

This go-anywhere, do-anything vehicle has an impressive track record across Australia and around the world.

There are over 1500 Unimogs currently in service and more are on the way from the Mercedes-Benz Australia production line.

Service training schools and computerised parts inventory are some of the extensive back-up facilities provided.

In addition, Mercedes-Benz Commercial Dealers throughout Australia are in a position to provide service and parts.

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