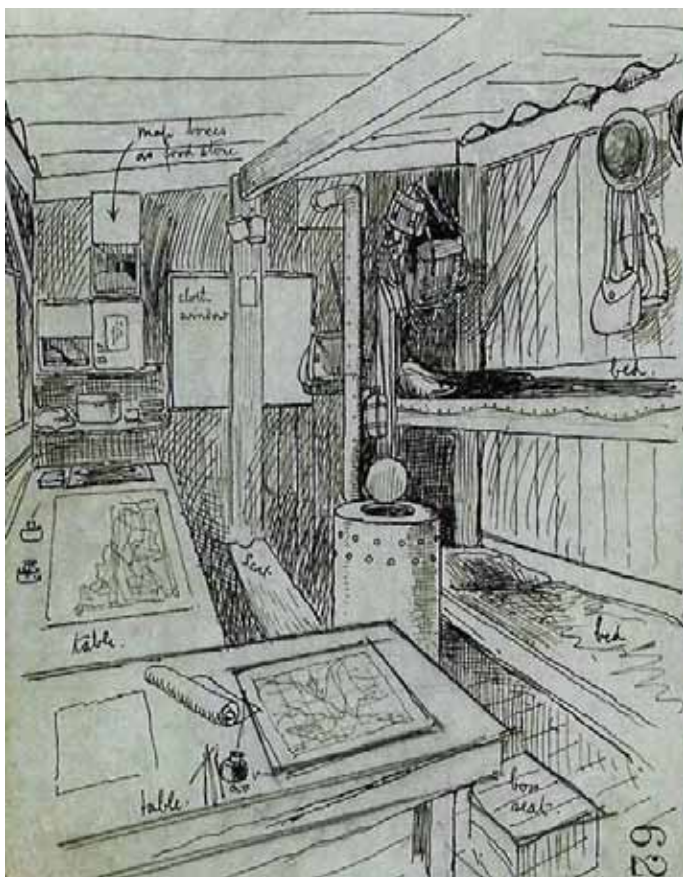


THE RANGER

Journal of the Defence Surveyors' Association
Winter 2006

Volume 2 Number 14



Working in the field – 90 years on: Larman Luck's sketch of the Topographical Section Dug Out at Foucaucourt, Western Front, March 1917 and inside a Geographic Section TACISYS 2006.



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In this edition of Ranger...

.....yet again we have an impressive number of articles covering a wide range of subjects pertinent to those interested in defence geospatial matters. Some ninety years after the development of sound ranging on the Western Front Richard Perry's article on 5th Regiment RA in Iraq shows that the technique is still a vital battlefield asset. This article is particularly welcome as it links right back the Association's roots in 1927 when it was first formed as the Sound Ranging Association.

The Association continues to pursue its charitable objectives through supporting events such as the very successful seminar on military mapping held at the University of Portsmouth last May and by the presentation of annual prizes to personnel who have made a notable contribution in the defence geospatial arena. The citations for not only the individual prizes but also the special prize awarded to the highly successful Royal Engineers (Geographic) 2005 Recruiting Team, show that innovative thinking and dedicated professionalism are alive and well across all ranks of the Association's related naval and military units. On the subject of awards, it was gratifying to see that DSA Life Member Admiral Steve Ritchie became the very well deserved first recipient of the new Alexander Dalrymple Award for his exceptional devotion to World Hydrography.

The more avid readers will notice that our new members include officers from both the German and Estonian Armed Forces – this is a welcome broadening of our membership overseas, an initiative set to continue in the future.

Current defence geospatial affairs receive good coverage with articles looking at the future of the Terrain Analyst, the Additional Military Layers project and a particularly interesting write-up by Staff Sergeant Will Robinson on a project to help with the reconstruction and development of Afghanistan. Phil Payne's update on the Hydrographic Surveying Squadron illustrates that their ships continue to be among the hardest working vessels in the Royal Navy with their units having deployed across the globe and surveyed vast areas of the oceans in a period of time that would have been unimaginable only a few years ago.

Whilst mentioning vast areas surveyed, Dave Watt has researched the immense surveying and mapping organisation that the Soviet Union created to map not only its own territory but also the rest of the world. The statistics are staggering, as is the secrecy on the subject that still remains today.

This has been yet another year of anniversaries of significant events; Jutland, The Somme, Nuremberg Trials, Hungarian Rising and, not least, The Suez Crisis which we mark with a personal reminiscence by Ian Mumford.

On a lighter and more seasonal note, we look at unit Christmas cards during the 20th century which leads me to wish the season's greetings to our readers and hope you enjoy a good read over the Christmas break.

Alan Gordon

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Opinions expressed in Ranger do not necessarily reflect those of the DSA or the editor.

DEFENCE SURVEYORS' ASSOCIATION

Formerly the Field Survey Association

DSA is a registered charity which maintains liaison between officers, warrant officers and senior non-commissioned officers, both serving and retired, and civilians who are working or who have worked in the Defence domain where the focus is environmental information, hydrographic, oceanographic and geographic surveys, locating and target acquisition, navigation, and geospatial intelligence.

The Association provides a variety of services to its members which include:

- A copy of each edition of Ranger magazine, published two times a year.
- Visits to a wide range of technical, military and historical sites, often not available to the general public.
- Opportunities to attend technical and historical seminars.
- Opportunities to attend events organised by other professional organisations working in related fields.
- Opportunities to network with senior personnel in the Defence environmental and geospatial sector.

Visits organised in recent years include:

Portsmouth Dockyard and HMS Drake at Plymouth
Fleet Air Arm Museum in Yeovilton
Headquarters Royal Artillery at Larkhill
The Joint Aeronautical and Geospatial Organisation at Hermitage
No 1 Air Information Documents Unit RAF at Northolt
The BAE Systems Battlespace Management Evaluation Capability at Farnborough
The Royal Engineers Mess and Museum at Chatham
Greenwich Royal Observatory
The Queen's Cartographic Collection at Windsor

If you would like to join the Association please complete the application form on page 64 or visit the Association's website (www.defencesurveyors.org.uk) where you can complete an application on line.

DSA AGM and Visit to the Shuttleworth Collection

On Saturday 29th July 55 members and their guests attended our annual general meeting held this year at the unique venue of the Shuttleworth Collection, located at the Old Warden Aerodrome in Bedfordshire.

DSA Chairman John Croft gave his end of term address, having served for the extended period of 4 years, a period of considerable change for the Association. To acknowledge the very significant contribution made by John to the DSA the President, Major General Patrick Fagan, on behalf of the Council and membership presented him with a pair of binoculars.

Brigadier Peter Walker, former Chief Executive of the Defence Geographic and Imagery Intelligence Agency, was inducted into the chairmanship by the outgoing chairman who wished him every success in taking the Association forward for the next two years, a period which will see the implementation of a number of innovations in the governance and profile of the DSA.

After the AGM the President presented the annual DSA prizes to the Royal Artillery and Royal Engineers winners, who are described elsewhere in this issue. Unfortunately the Royal Navy prizewinner was unable to attend and so he will receive his award at a later date from Captain Ian Turner, the Hydrographer of the Navy.

After an excellent luncheon there was a guided tour of the Shuttleworth Collection conducted by three very knowledgeable guides. It would take up too much space to describe all that was on display, suffice it to say it is one of the best collections of vintage aircraft to be seen anywhere in the world, most of which are still in flying condition. Many said that they would return to Old Warden when there was one of their regular flying displays.

David Wallis

From The Chairman

By Peter Walker

As I take up my position as Chairman of the Association I would first like to thank my predecessor, John Croft, for all his efforts to ensure that the DSA is in such good shape. His work, assisted extensively by members of the Council, means that the new Council should be able to move forward in a most positive manner.

All members of the Association will have received a copy of a paper entitled “The Future of the DSA” which was endorsed at the Annual General Meeting held on 29th July 2006. This paper confirms that the Objectives of the Association, as set out in the Articles, have not changed. It goes on to describe how the Council intend to further these Objectives in the years to come. This will result in a variety of key activities being run, principally:

- Publication of Ranger magazine as a high quality technical periodical.
- The award of prizes annually to recognise achievements in the Defence Surveying community.
- Maintenance of the DSA’s website to ensure members and other interested parties have a good means of keeping abreast of the activities of the Association.
- Support for historical defence and military mapping, charting, imagery, sensor and positioning activities.
- Development of links with other organisations to extend the events open to DSA members.
- Encouragement of publicity for the Association through regular input into appropriate magazines.
- Organisation of 3-4 visits per year aimed at broadening understanding of general military and specific geospatial matters, as well as providing a forum for members to meet socially.

Of these activities, Ranger magazine is viewed as the primary focus for effort within the Association. This magazine, under the every effective editorship of Alan Gordon, is now a highly regarded publication, which offers an excellent medium for discussion and debate of Defence Surveying matters. Please contribute to this magazine as often as you can.

The Council will focus on furthering all of the activities listed above, but you will appreciate that this takes a considerable amount of time and effort. Therefore, I would be delighted if members outside of the Council offered their services from time to time to assist with specific activities. Should any of you feel you are in a position to help in this way, or you would like to join the Council at some time in the future, please let us know.

Finally, I very much look forward to meeting as many of you as possible and your guests at events run by the Association. Please support these events – they are very well organised by David Wallis and provide a range of activities to suit a variety of interests.

www.defencesurveyors.org.uk

Readers are advised that the Association’s website – address above – is updated on a regular basis and is well worth a visit. For those without the means to readily access the site we recommend an occasional visit to your local library where staff will be only too happy to assist you.

Anyone wishing to publish materials on the site should forward them in the first instance to the editor of Ranger whose contact details are in the front of this issue.

New Members

Soenke Fischeofer: Soenke joined the German Army in 1984 and was initially trained to become an officer in SIGINT until 1986. Whilst in the Reserve he changed service and became a Navy-Infantry Officer. From 1986 until 1991 he studied Geology at Hamburg University. After spending time in south west Nigeria on a research project he worked in environmental related projects as a Hydrogeologist. In 1997 he joined the Topographic Battery 800 in Muenster where he served as a Platoon leader. He then moved to the Bundeswehr Geo Information Office where he became an expert in Cross Country Movement Mapping. Between 2002 and 2005 he was the Geospatial Branch Chief in 7th Panzer Division in Duesseldorf in close cooperation with the ARRC. In 2003 he acted as Chief Geospatial Officer in MNB (SW) KFOR. Since April 2005 he has served as SO2 in NATO Allied Command Operations J2 Geospatial Branch / Policy & Operations.

Andris Sprivul: Andris joined the Topographic Service of the Estonian Defence Force in 1997. He graduated from Tartu University in 2002. In 2003/4 he attended 89 Army Survey Course at the Royal School of Military Survey. He returned to Estonia and is currently serving with the Military Geographic Group based in Tallinn.

Iain Whittington: Iain was commissioned into the Sappers in 1966 and served in RE construction units before and after obtaining a BSc(Eng) in 1971. After completing the Army Survey Course in 1973 he worked at Ordnance Survey and then took up the exchange appointment as OC Cartographic Squadron (Royal Australian Survey Corps). He then returned to UK to serve as a Staff Officer at Directorate of Military Survey before becoming OC 512 STRE in Washington DC. After completing a MSc in Remote Sensing at London University he served as Commander Geographic, British Forces Germany. He then served as senior staff officer to AFNORTH & AFNW and during this tour was seconded to UNPROFOR in Zagreb. He retired as Director, Geographic Commitments, Military Survey in 2001.

What's in a Name?

In the late 1960s Dennis Rushworth, Head of the Mapping & Charting Establishment, decided that the buildings at Feltham should be named after famous surveyors and cartographers rather than just alphabetically. He invited members of the Establishment to propose suitable names.

Jack Weightman, the mathematician and computer specialist, wrote a long and impassioned letter concerning a name for the newly constructed building which housed the brand new ICL 1903 mainframe computer. Jack was torn between two famous people; Colonel Newcombe who, amongst other things, had mapped Southern Palestine and North East Sinai and a Dr Peuter who was, I think, a German mathematician. He could not decide which name should be used so recommended that both men should be honoured and that the building should therefore be named 'The Newcombe/Peuter Building'!

Robert Dobbie

email and the DSA

If you have an email address and the DSA is not using it to contact you then please let the secretary know as it provides a far more timely and cost effective means of communication than the traditional post. Also, please do not forget to let the DSA know if you change your ISP. Contact the secretary at secretary@defencesurveyors.org.uk.

Defence Surveyors' Association Prizes 2005

The DSA awards a prize each year to a serving member of the Royal Navy, the Royal Artillery and the Military Geographic community who has made a significant contribution in their particular field of defence geospatial matters. Royal Artillery winner WO2 (SMIG) Jason Cartwright RA and the Military Geographic winner Corporal Mark Lanwarne RE were both able to be present at the DSAAGM to receive their awards personally from the President, Major General Patrick Fagan, the Sapper winner having been flown back from an operational tour in Iraq specifically to receive the award. Unfortunately the Royal Navy winner, Lieutenant Commander (Retd) Richard Read RN, was unable to attend the presentation and received his prize from Captain Ian Turner, the Hydrographer of the Navy, at a later date.

ROYAL NAVY PRIZE

Lieutenant Commander RH Read Royal Navy (Retd)

Lieutenant Commander Richard Read joined the Royal Naval Hydrographic School at HMS Drake in November 1996 as the Long Hydrographic Course officer. He remained in this appointment until his retirement from the Royal Navy in January 2001, at which time he took up the post of Multibeam Manager (MBM) employed by Flagship Training Limited (FTL) at the recently renamed Royal Naval HM School (DRAKE) and has continued in this position with FTL at the Maritime Warfare School - HM Training Group at HMS Drake. The HMTG is responsible for the training of all hydrographic, meteorological and oceanographic personnel in the RN. It is due to Richard Read's very significant contribution to the introduction of multibeam echo sounder (MBES) systems into service with the RN that he is nominated for the Defence Surveyors' Association Royal Navy prize.

During his early time as MBM, Lieutenant Commander Read was involved in the capability assessment of the Atlas Fansweep 20, which was subsequently fitted in HMSML Gleaner. He spent considerable time and effort perfecting the operation of both the data gathering and the data processing systems, which enabled him to successfully develop training courses for personnel appointed and drafted to the vessel as well as developing the Standard Operating Procedures (SOPs). This work was essential to the smooth introduction into operational service of the RN's first MBES system. He used his experiences as the basis for his thesis leading to him gaining his MSc from the University of Plymouth.

Subsequently Richard has continued his training role whilst becoming integral to the procurement, trialling and setting to work of the RN's next generation of MBES systems supplied by Kongsberg Maritime and fitted to HM Ships Echo, Enterprise, Roebuck and Gleaner. He has spent time at sea during their trials and setting to work periods, developing SOPs and training material as well as advising on operational usage and data management. Recently he has been at sea around the Antarctic in HMS Endurance helping to set to work the RN's latest MBES, the EM710. His previous knowledge and operational experience proving to be invaluable at such an extended distance from shore support.

Throughout this time Lieutenant Commander Read has extended his reach to include the development and delivery of MBES training courses for civilian organisations, such as Fugro, Trinity House, Gardline and Thales; additionally he has taken on the task of teaching least squares to the HM Advanced Course. He has also continued in his voluntary post of treasurer to the south-west branch of the Hydrographic Society.

During his 5 years as MBM, Richard Read has been pivotal in the successful development of training, SOPs and operational employment of all MBES systems in service with the RN. He is recognised world wide as a leading expert in the operational use of MBES systems, a status enhanced by the principal MBES research personnel from the Ocean Mapping Group (University of New Brunswick) and the Centre for Coastal and Ocean Mapping (NOAA-University of New Hampshire) who seek his opinion regularly.

His work and training have been of such high quality over a number of years that he was recommended for the award as a retired officer rather than a serving officer as is the norm.

ROYAL ARTILLERY PRIZE

Warrant Officer Class 2 (SMIG) J Cartwright RA

WO2 Jason Cartwright is generally a quiet, undemonstrative character, until that is, he is engaged on his great passion of survey; for this he becomes hugely animated with an eagerness that is totally infectious. Over the past 18 months he has worked as Sergeant Major Instructor Gunnery in Survey and Metrology.

Aside from his considerable instructional portfolio he has made it his personnel goal to complete a new doctrine and policy for survey for the Royal Artillery (RA), a task that has defeated several staff officers over a number of years.

The old survey deployment policy was created in the 1980s in a very different era in terms of equipment, organisation and manning. The pace of change in all of these areas in recent years has necessitated a complete review of all aspects of the survey policy. While all acknowledged that this was required, there was a lack of drive to pursue this to a conclusion until WO2 Cartwright became involved. He appreciated the requirement and set himself the task of acquiring all relevant knowledge in order to be able to influence the debate and assist in the drafting of the policy. Although unfamiliar with the staff work, WO2 Cartwright plunged determinedly forth, wading through a morass of technical detail, establishments, organisations and associated equipment issues to ensure that he was fully informed. He conducted painstaking research into the survey requirements of all RA equipment, examined the current and future survey devices and identified likely training levels. This extensive work produced a very detailed database, enabling him not only to participate in work groups and study groups for the development of the new policy, but also to have a significant input into the development of other systems as regards the implications for survey.

He manfully took on the work of an SO2 and, as a result, his overall contribution has fundamentally influenced the direction of RA Survey policy and provided vital knowledge to inform the development of many other Artillery systems. This is a remarkable and valuable intellectual achievement. WO2 Cartwright is now the resident expert in the survey field for the RA, this is down to his determination and active drive to learn and develop a subject which others had allowed to slip.

MILITARY GEOGRAPHIC PRIZE

Corporal M J Lanwarne RE

Corporal Mark Lanwarne is currently employed as the Data Corporal within the Geographic Section, Engineer Branch, Headquarters 3rd (United Kingdom) Division. He is responsible for the acquisition, evaluation, maintenance and preparation of both digital and hard copy geographic information. The Geographic Section is intimately involved with the collation, production and control of Geographic and Engineer Intelligence information for the Headquarters' planning process. It is due to Corporal Lanwarne's contribution to the field of Engineer Intelligence that he was nominated for the Defence Surveyors' Association (Military Survey RE) prize.

During Operation TELIC 2 Headquarters 3rd (United Kingdom) Division identified an urgent need for a standard means of collating and controlling Engineer Intelligence information. Consequently, a database was hurriedly produced by the Geographic Section, Headquarters Multinational Division (South East) to support the Area of Operations. Unfortunately, this initial work was incorrectly structured and did not adhere to recognised information management standards. Consequently the development of the database was continued in Bulford on the Division's return to the United Kingdom. This coincided with Corporal Lanwarne's arrival in the Headquarters in December 2003 and he immediately seized upon the importance of the database which at the time represented a significant gap in Royal Engineers capability. Working on his own and without specific direction he took it upon himself to resolve this shortfall.

Between 2003 and the present day he single-handedly built a geospatially referenced database which allows Engineer Intelligence information to be managed collectively and efficiently. This has often involved working in his own time and has required him to significantly broaden his database management skills beyond those taught on Military Engineer Geographic (Data) Technician courses.

The database has since been accepted by the Engineer Intelligence Working Group as the Royal Engineers standard, providing consistency between Royal Engineers units and formations thus saving time, money and resources by avoiding the duplication of effort, which was evident in the past. The database has been fielded within headquarters and engineer units deployed to Iraq (Operation TELIC) and Afghanistan (Operation HERRICK). Additionally, 170 (Infrastructure Support) Engineer Group, are expected to adopt the database as their standard Engineer Intelligence management tool. Demand for the database has been so high that Corporal Lanwarne is now updating it to support forthcoming operations.

Corporal Lanwarne has demonstrated a level of competence, foresight and technical ability well above that expected of his rank, experience and training. Throughout the period he has displayed highly commendable initiative and enthusiasm. Consequently, there is now a combat proven Engineer Information database for use in peacetime and importantly, during operations.

Defence Surveyors' Association Special Prize

The Royal Engineers (Geographic) Recruiting Team 2005

In addition to the usual three annual individual prizes, the Council decided that the excellence of the Royal Engineers (Geographic) Recruiting Team for 2005 warranted a special prize to be shared by all four members of the Team.

In early 2005 a decision was taken to form a RE (Geo) Recruiting Team. In recent years two issues had emerged which required a highly proactive recruiting campaign to be put in place:

- The number of soldiers joining the Specialisation had dropped to the extent that it was clear that under-manning within the RE (Geo) squadrons would be a significant problem if nothing was done.
- Defence demand for soldiers within the Specialisation was growing quickly, with increased establishments agreed as part of three enhancements: the Future Army Structure; an uplift to the internal Defence Geospatial Intelligence (DGI) organisation; and for Project PICASSO which will provide a fully integrated enterprise information systems architecture for DGI.

As a consequence the RE (Geo) Recruiting Team was set up at Hermitage under the leadership of WO1 Andrew Rudd RE. Four soldiers were posted to the Royal Engineers Regional Recruiting Teams at Catterick, Minley, Bulford and in Scotland, but the principal driving force behind the recruitment campaign came from WO1 Rudd and his staff at Hermitage, SSgt Crago, Sgt Wiggins and LCpl Miles. This campaign included a wide range of initiatives designed to increase the number of personnel applying to become Military Engineer Geographic Technicians (ME Geo Techs). Some of the key activities within the recruiting plan are shown below:

42 Engineer Regiment (Geographic) Recruiting Plan
Manning of 42 Engineer Regiment (Geographic) Recruiting Team and provision of ME Geo Techs to RE Regional Recruiting Teams.
Attendance at a wide range of recruiting events, including county shows, technical shows, Army recruiting events, RE Look at Life and schools visits.
Development of the RE (Geo) Web Site
Development of 42 Engineer Regiment (Geographic) recruiting display boards, brochures, handouts and aptitude booklet information.
Organisation of a major conference for Army Careers Information Office staff.
Development of Personal Development Activities for use in Schools as part of the GCSE Geography curriculum.
Modernisation of the RE (Geo) recruiting trailer
Support in production of Army TV advertisements featuring Geo.
Strengthening of links with local Combined and Army Cadet Forces.
Achieving Golden Hello and Pinch Point status for the Geo trades.
Introduction of database to track interest shown by individuals and allow evaluation of success of recruiting initiatives.

One example of the extent of the work done by the Team is outlined below. Personal Development Activities (PDAs) are another way for civilians to get an idea about what ME Geo Techs do and a chance for the Team to recruit people. The idea of a PDA is to go to a school or college, give a group of up to forty students a brief presentation about what ME Geo Techs do, then take part in a group activity which is designed to be fun for the student yet informative at the same time. The Team developed three PDAs, one based around each of the three Geo Trades:

- The Data Trade PDA was a navigation course with the students using Global Positioning System (GPS) handsets to navigate from one point to the next. Ten orienteering markers would be placed over a 2-3 kilometre area, the position of each then logged into a GPS handset. This data would then be downloaded to the other handsets, which in turn are given to the students, one hand set per pair. The pairs of students would then be set of at intervals and have to get round all of the markers in the quickest time.
- The Terrain Analysis PDA was designed to get the students thinking about how the terrain affects an Army in battle. For this a small-scale re-enactment of the Battle of Tewkesbury was chosen, which took place during the War of the Roses in 1471 between the Yorkists and Lancastrians. The idea for this is to split the group of students down into four teams, the first team taking charge of the Yorkist Army and the second team taking control of Lancastrian Army. The other two teams each get a modern day style Army based on British Forces. By analysing the terrain, the teams then decide on the most suitable location to place the various elements of their Army, Archers on the high ground, etc for the Medieval Armies, and machine gun placements for the modern Armies. They then place scale model soldiers onto a specially built model of the area. The two teams then have to try and defeat their opposition according to set of rules, ideally using the shape of the land to win.
- The final PDA was based upon the work of a Production Technician. Twelve laptop PCs were purchased and networked together. The idea of this PDA was to take the laptops to the school/college and allow the students to make their own map of the local area. They would start with a blank map and the Recruiting Team would talk them through how a map is composed, bringing in the roads, then the buildings, then the trees, etc, gradually building up all the components of a map. The finished product could be given a scale bar and other marginalia, and then printed off for the student to keep.

Since March the Recruiting Team has travelled the length and breadth of the country with the Geo Recruiting Trailer, and has visited many towns and cities including Edinburgh, Liverpool, Manchester and London. The Trailer has had several improvements including a touch screen for the plasma TV and a re-designed centre stand. A summary of the key events attended in 2005 and a look forward to those already planned for 2006 is given below:



Colonel David Attwater presenting the Team Leader with the Special Prize certificate.

2005	
April	Geo Open Day / Cheltenham Skills Festival
May	Dragons March
June	Army Exhibition for Schools (Edinburgh, Catterick, and Bassingbourn) / RE Look at Life
July	Kennet Schools Challenge / Wirral Show / Freedom of Newbury / Festival of the sea
August	RE Look at Life / Beat of the Retreat / Eye Show
September	Southport Air Show / Op London Soldier / Newbury Show / Re Look at Life x 3
October	Oxford Cherwell College (PDA) / Exposia 05 / RE Look at life
November	Op Hallam Exp / Downs School (PDA) / 3 PDA weeks with 4 Div

2006	
January	Geo Road Show / RE Look at Life
February	Op White Rose / Bournemouth Skills Festival / Barnstable Schools (PDA) / RE Look at Life
March	Op Midland Soldier / RE Look at Life
April	Gloucester Skills Festival / RE Look at Life
May	Dragons March / Liverpool Military Show
June	Workington Carnival / Army Exhibition for Schools (Edinburgh, Catterick & Bassingbourn) / RE Look at Life
July	Colerne Schools Week (PDA) / Blackpool Air Show / Rochdale Schools Week (PDA) / Aldershot Show / Oldham Schools week (PDA)

To date this recruiting effort has seen the number of potential ME Geo Techs rise above all expectations. Before the Geo Recruiting Team was set up the Geo Trade training courses only had 8-10 soldiers on each. That figure has now risen to 20 soldiers on the February 2006 course, over 20 soldiers already confirmed for the August 2006 course. This trend will continue into the future with a further 32 expected in February 2007. This is especially important as the number of ME Geo Tech posts is expanding significantly within a variety of Armed Forces headquarters and units in the year to come.

It was the efforts of WO1 Rudd and his team of SSgt Crago, Sgt Wiggins and LCpl Miles that developed the ideas and took the brunt of the workload needed to turn this initiative into a highly successful venture.

The Five Dragons of Singapore

The article by Mok Ly Yng in the previous issue of Ranger made reference to the Five Dragons of Singapore. Mok has kindly now provided a website that will explain these five 'fengshui' dragons. For more information visit:

http://chinese.wayonnet.com/category_fengshui_atlas.asp?aID=10&articleid=266

Three dragons converge on the Singapore town area, the fourth rounds the Seletar-Changi circuit and the fifth lines the Johore Straits, meeting head-on with the fourth off Changi Point. Essentially, a fengshui 'dragon' symbolises a mountain range or series of ridges in the topography.

Future Terrain Analysis

By John Tate BEng(Hons) MSc MCGI MRICS -
Business Development Manager, TENET Defence Ltd

Preface

I am writing this article having called time on my 3-year tenure as the last Senior Instructor Terrain Analysis at the Royal School of Military Survey (RSMS) and on my 17+ years of military service. The views expressed here are my own, collated during my time in Military Survey and seek to identify the positive future for the Terrain Analyst.

Introduction

Operational success is often as a result of Commanders gaining a thorough understanding of the terrain and history is littered with many success stories. The requirement to understand the terrain is not a modern concept, as stated by arguably the most astute tactician, Sun Tzu in circa 500BC, *“Know the enemy, know yourself: your victory will never be endangered. Know the ground, know the weather: your victory will be total”*. The common denominator between opposing forces is the terrain and weather, whoever makes the most of the environment, will gain a significant tactical advantage as demonstrated by the 300 Spartans who held the Persian Army at the narrow defile of Thermopylae in 480BC.

UK Defence defines terrain analysis as the *“process of analysing a geographic area to determine the effects of the terrain, geography and weather on military operations”* (MOD (2003)). In isolation Terrain Analysis will not provide the ultimate answer to the military question, but it will provide predictive geographic intelligence that can be used to assist in the formulation of the plan as noted by General Norman Schwarzkopf during Operation DESERT STORM in 1991 who stated, *“Once we understood the terrain, the plan fell into place.”* Terrain analysis is a viable and important process across the full spectrum of military operations.

A Terrain Analyst Technician (TERA Tech) is responsible for the analysis of the available geospatial data in order to provide the Commander with predictive information on the environmental impact. Today the TERA Tech's tool is a sophisticated Geographical Information Systems (GIS), which has replaced the more traditional overlay and pens, allowing more complex analysis to be undertaken more efficiently and over a larger area. GIS, once the remit of the specialist is increasingly become more universal and is now found in many mission application systems in one guise or another.

This paper will initially describe the basic concept of Terrain Analysis before discussing the role of Today's Terrain Analyst. The paper will then explore the future for the Terrain Analyst and identify new areas of exploitation capability.

Background

Terrain analysis tradecraft includes all issues relating to the impact of the ground or environment on the effective conduct of military operations. It addresses not only the mobility of combat vehicles, but also the many factors affecting the employment of combat support, logistics, communications, infrastructure and intelligence systems. Terrain analysis meets the needs of the Military Commander in two principal ways. Firstly, it supports the Intelligence Staff through the provision of predictive information on how the enemy (and friendly forces) are likely to utilise the ground in the form of Battlefield Area Evaluation (BAE) as part of the Intelligence Preparation of the Battlefield (IPB) process as well as assisting in the development of an intelligence collection plan. Secondly, it supports the operations planning staff in selecting a course of action that best enhances weapon capabilities and provides for movement, concealment and protection of friendly forces. It is important to remember that geospatial support crosses the many J-Branch boundaries.

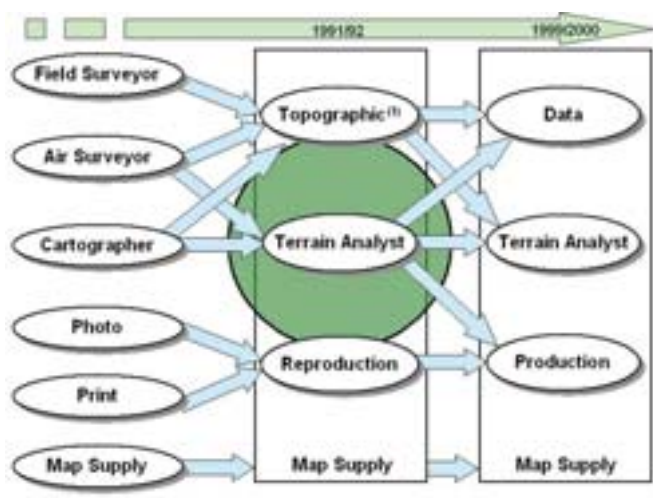
The most significant and dynamic, but arguably the most difficult, factor to include in terrain analysis is weather. It will undoubtedly affect the conduct of military operations but one, which is neutral and cannot be controlled. Along with the terrain and the time of day, weather constitutes the basic environmental setting for all military operations. Weather not only affects battlefield operations, weapons, and electronics systems but it also affects personnel as noted by General Heinz Guderian during Operation BARBAROSSA in 1941 *“This is sheer torture for the troops, and for*

our cause it is tragedy, for the enemy is gaining time, and in spite of all our plans we are being carried deeper into winter... The best of intentions are wrecked by the weather". The capture of raw meteorological data is relatively straightforward however, the creation of accurate predictive information, at the fine levels of resolution required by the Military Commander, is more complex. To fully incorporate weather into terrain analysis the issues of data fusion and the storage of archive data must be overcome.

TERA Techs are currently employed at Joint and Formation Headquarters in a singleton post or as part of a small section. They endeavour to highlight key aspects of the terrain ensuring that the information is quickly and easily brought to the attention of all staff officers and other interested persons. The information required to conduct terrain analysis needs to be readily accessible and capable of manipulation in order that only those factors specific to the task or equipment are considered. Unfortunately a TERA Tech will spend significant proportions of their time preparing the data for exploitation.

Genealogy of the Terrain Analyst

Before looking to the future it is perhaps prudent to trace the origin of today's TERA Tech, as it will give an insight into the foundation for their wide spectrum of skills. As with any family tree discovering one's direct ancestors is never easy and as shown in the simplified schematic at Figure 1 the first generation TERA Tech was predominately a combination of Air Survey and Cartographic Technicians.



Schematic of the genealogy of the TERA Tech. The green zone reflects the increase in the TERA Tech skill set before the trades were rebalanced in 1999/2000.

As shown in the simplified schematic at Figure 1 the first generation TERA Tech was predominately a combination of Air Survey and Cartographic Technicians. Victims of their own success and with the advent of GIS (more in the next section) the skill set and role of the TERA Tech began to expand until a decision was made to redress the trade balance in 1999/2000. Part of this expansion was due to the non-adoption of the imagery responsibility by the Topographic Technician¹. The primary role and responsibilities of the TERA Tech include the analysis of geospatial data in order to assess and predict the effect of terrain and weather on operations as well as the presentation and dissemination of the resultant decision aides and products².

Digitisation and Geographic Information Systems (GIS)

In the pre-digital era manual or core terrain analysis was often subjective, time and labour intensive and did not always provide the Military Commander with timely predictive information required to gain the military advantage. However, advances in the world of information technology (IT) and the creation of Geographic Information Systems (GIS), coupled with an increase in the availability of remotely sensed, digital geographic and non-geographic data have enhanced the discipline of terrain analysis. Military Survey, as it was, opted for the employment of GIS in the early 1990s in order to increase the tempo and complexity of decision support material production. However, one must remember that GIS are not terrain analysis; but merely a tool to assist the user. Human input remains arguably the most critical element; only humans have the ability to critically analyse and be subjective about digital outputs or Tactical Decision Aids (TDAs). GIS, once the reserve of the expert, is now readily available for all types of user, where and when they need it. Today we have witnessed only the tip of the proliferation iceberg; NEC and the many Defence procurement projects will provide significantly more deployed GIS applications. This increase has come about by industry's move towards a more open and interoperable environment.

A GIS is more than just a software package but a combination of five interlinked components: hardware, software, users, data and procedures, as shown schematically in Figure 2. The data are an abstract representation of the world and are generally represented by vector, raster and matrix data. Each data type brings with it advantages over the other (Burrough and McDonnell, 1998) and generally a combination of all data types is required to conduct any terrain analysis. Using a GIS allows data to be stored in the same reference system as layered information, enabling more

complex combinations of data to be achieved. However, the potential data deluge brings new issues such as: management, capture scale and understanding the original purpose of the data. It could be considered that the procedures to ingest, manipulate, analyse and output the data are the corner stone of the GIS. Open data standards have made great inroads to solving the data interoperability conundrum but as yet there is no move to solve the multiple algorithm issue, as highlighted by the number of different line-of-sight (LOS) algorithms detailed in the LOS Compendium (ERDC/TEC, 2004). In a climate of NEC, Services Oriented Architecture (SOA) and Web Services the need to solve this issue becomes even more critical.

To ensure that the TERA Tech has the requisite skill set in which to deliver their trade craft the RSMS training delivery philosophy is to ensure that they have an in-depth knowledge and understanding of the data; its source, purpose and limitations in addition to a comprehensive understanding of the procedures they will use and what impact they may have on the data. The resultant TERA Tech is able to 'think outside the box' in a similar way that a chef can mix ingredients to make a meal rather than follow a set recipe a TERA Tech knows what data combinations can be used, equally just as a chef will understand why his soufflé hasn't risen a TERA Tech is able to critically examine his results ensuring that the procedures used were valid and appropriate.



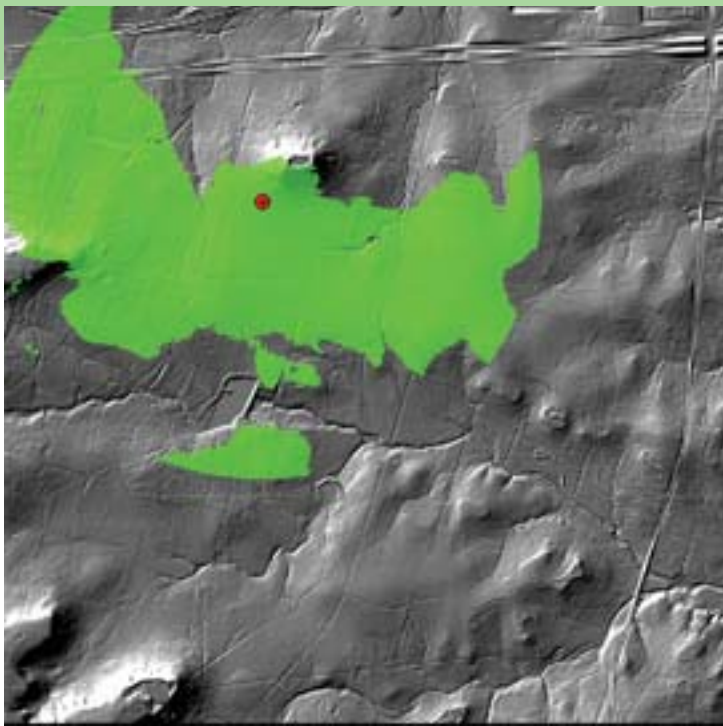
Five components of a Geographical Information System (GIS).

Terrain Analysis - Today

The collection, evaluation, storage and maintenance of the environmental information are the first step in the terrain analysis process. The data will consist of encyclopaedic (or static) and dynamic (non-static) information and will determine what questions can be answered. To maximise the benefits of terrain analysis the data must be complete, consistent and current. GIS provide many data manipulation tools, but care must be taken to ensure that the integrity of the original data is not lost.

The second step of the terrain analysis process is exploitation of the data in response to a specific military question. The exploitation may take many forms, examples include but are not limited to; BAE, environmental modelling to determine cross country movement or flood prediction, site selection for Helicopter Landing Sites or Refugee Campsites using multi-criteria analysis (MCA), intervisibility studies, point pattern analysis and network analysis.

The first IPB stage, BAE, seeks to predict how the enemy and friendly forces will use the terrain and validate it across the whole spectrum of military operations. Each of the seven broad categories of neutral terrain factors: surface configuration (slope), vegetation, surface materials (soils), surface drainage, transportation, obstacles and urban development, are examined along with any potential change, due to weather. Military aspects of the terrain can be summarised by the use of the acronym OCOKA: Observation and Fields of Fire; Concealment and Cover; Obstacles; Key Terrain; and Avenues of Approach and Mobility Corridors. Taking observation as a typical example the influence of terrain on the ability to exercise surveillance over a given area either visually or through the use of optical (LOS) and electronic surveillance devices is assessed. The net effect of visibility and observation is the capacity of a force to see (or its vulnerability to be seen), they are analysed independently because visibility varies with weather conditions that are transitory while, observation varies with terrain conditions that are relatively permanent. The creation of a viewshed or dead ground plot from a digital elevation model (DEM) is relatively straightforward and a typical example is given at Figure 3. However, its subsequent interpretation in light of data uncertainty or more complex LOS questions take time and require an understanding of the data that today a general user is unlikely to possess. Providing LOS or viewshed Web Services will provide significant benefit to the war fighter who will have the answer in the time it takes to process and transmit,



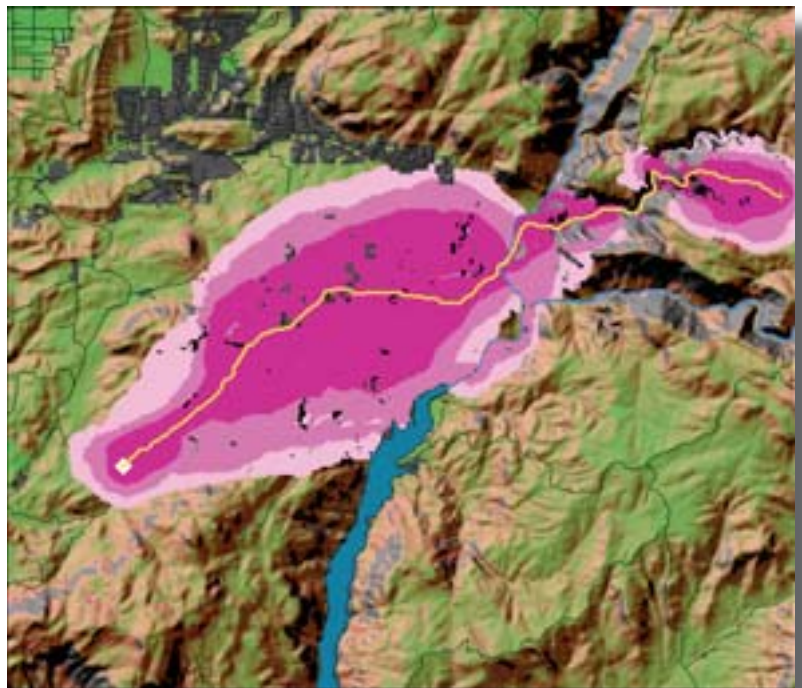
Viewshed, draped over a hillshade, using a 4 metre resolution Digital Elevation Model (DEM). The green area represents the terrain that can be observed by the observer (Red Point) out to a distance of 1500 metres.

however care must be taken to ensure that the uncertainty is portrayed in a manner such that a general user cannot ignore the issue or misunderstand the message it presents.

The generic term Cross Country Movement (CCM) modelling is used to describe the process of predicting off-road movement taking into consideration the terrain, weather, scenario and vehicle capabilities. Typical factors examined are: slope, soils, vegetation, drainage (hydrology), vehicle mobility characteristics, force size and composition and weather. CCM products use three broad categories: Severely Restricted, Restricted and Go or No Go, Slow Go and Go (MOD, 1997) to convey the predicted off-road mobility. Initially a complex process to establish the use of a CCM model allows the process to be standardised

and repeatable but a degree of knowledge is necessary to use the model appropriately. For example a typical layer within the CCM is slope and an uphill slope of 5.7° (10 %) is sufficient to slow a main battle tank by 50 %. The maximum uphill slope considered feasible for operational/tactical CCM purposes is 24° , although the design criteria may be as high as 36° . It must be remembered that neither of these slope categories will prevent movement in a downhill direction and slope directionality should be incorporated. In order to identify the CCM options, over a given geographical area, slope categories must be determined and an appropriate impedance value applied. Figure 4 shows a typical CCM cost surface. While there are many CCM models available for use, for example NRMM II (US Army, 2001) and the RSMS Model (Spencer, 2002), the TERA Tech is able to create his own CCM model taking into account the available data and situation but again highlights the potential of multiple solutions that may be presented to the Commander as well as the need for validated and authorised models.

When two or more criteria affect the possible outcome of a defined problem multi-criteria analysis (MCA) methodology facilitates the identification of the solution. For example by considering proximity to friendly and enemy force locations, air obstacles, required area and weather conditions MCA can assist in the identification possible helicopter landing sites (HLS) and indicate which is best. The TERA Tech can employ several flavours of MCA ranging from the simplistic use of Boolean Layers to the more complex weighting method depending upon the complexity of the question and the availability and knowledge of the data. MCA is an extremely flexible



CCM cost surface, created from soil, slope, vegetation and hydrology layers. Severely Restricted, Restricted and Go areas are shown in dark grey, brown and green respectively. The yellow line indicates the fastest route from the start point (right) to the end point (left). A corridor analysis is also shown that signifies the top 3% of routes between the start and end points and identifies potential choke points.

technique available to the TERA Tech providing solutions for example where to locate a refugee campsite or a unit harbour area. The standardising of these MCA solutions helps encapsulate the TERA Tech's tradecraft but the application of weights is often subjective and must take into account the views of the customer. Therefore any MCA site selection model must retain the ability to change the weights and avoid becoming a button pushing exercise.

Part of the TERA Tech's remit is to present their predictions to support military decision making across the full spectrum of operations. Typically a TERA Tech will produce, in hard and soft copy, tactical decision aids (TDAs) such as: Modified Combined Obstacles Overlays (MCOO), BAE, site selection products and deadground studies. However, regardless of the format the TERA Tech is able to fully brief the product to the Military Commander ensuring that any assumptions and uncertainties are clearly articulated. Today military communication networks are beginning to provide a conduit for the rapid dissemination of terrain analysis products to be used either standalone or in conjunction with other mission application systems as traditional images and maps or as videos or interactive 2.5D³ models. However, the usually large data volumes associated with spatial data are often prohibitive on low bandwidth networks and if the data interoperability between systems is not available the customer may not always be able to view the terrain analysis product or TDA. While soft copy dissemination has facilitated a faster decision making cycle the conveying of uncertainty in the product must be addressed. A typical viewshed or deadground study is a Boolean product predicting that a location can or cannot be seen but provides no indication of the errors within the data from which it was derived and the use of a long textual caveat will likely be ignored by all but the most fastidious users, after all most soldiers cut the marginalia off a map!

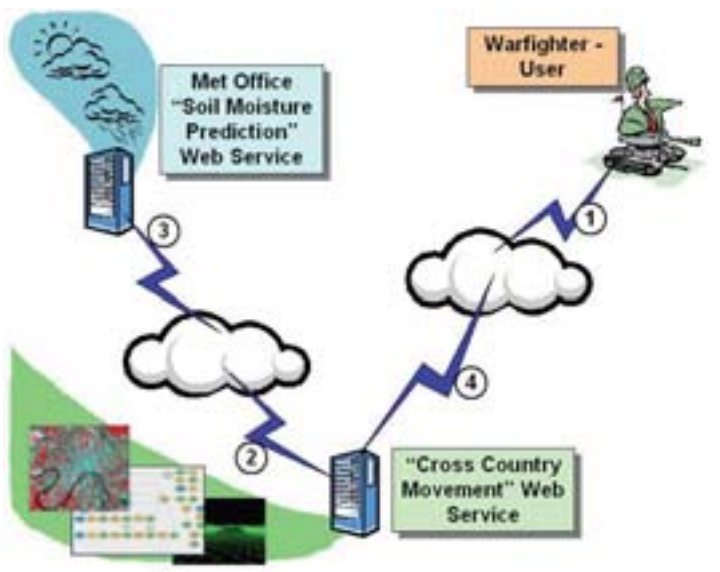
Terrain Analysis - The Future

The conduct of terrain analysis in the future will undoubtedly change as new systems are brought into service and the subsequent predictive analysis provided by the TERA Tech will increase in terms of complexity and customer base. The availability of exploitable 4D⁴ (and potentially 5D⁵) 'cubes' of fused environmental information will allow the Commander to fully reap the benefits of TERA Tech's endeavours. The provision of the data in an 'exploitable' format coupled with an ability to acquire data from source will lead to a significant reduction in data preparation time allowing more time for exploitation. However, the benefit of increased data sources and availability will not be realised unless the associated Meta Data and information management systems and procedures are provided. It is essential that the TERA Tech is able to rapidly source their data requirement from national and local repositories; failure to do so will lead to '*data deluge*'.

The continued advancement of GIS software combined with more and improved exploitable data will mean that the TERA Tech will be able to conduct terrain analysis that is more complex, of greater fidelity, over greater areas and faster than they do today. Examples might include the incorporation of slope directionality in a CCM model or the integration of predicated soil moisture data from the Met Office. The simplification of model generation will allow this complex analysis to be repeatable, shared and standardised thus retaining the tradecraft of the TERA Tech. Note the term standardised and not standard, the TERA Tech is sufficiently intelligent and has the necessary skill set to modify the model to suit the posed question and should not be constrained by standard models that only require button pushing. The changing nature of military operations has resulted in for example: increased use of demographic data while Improvised Explosive Device (IED) incidents are analysed using point pattern techniques in order to attempt to predict future incidents. The move into the urban environment, an area we have sought to avoid, requires the use of network routing models to assess movement and mobility rather than traditional area models. While complex terrain analysis will remain the remit of the expert analyst the ability to conduct basic terrain analysis functions must be dissolved to the lowest level, it is inconceivable to expect front line units to request a dead ground study from a formation headquarters because they do not have access to the service or systems to directly answer the question.

Perhaps the greatest step forward will be the provision of terrain analysis capabilities direct to the warfighter through the use of geospatial web services within a NEC environment. The anticipated proliferation of exploitation capability to the warfighter should not be seen as a threat to the TERA Tech but embraced as a giant step forward not least because of the need for a greater geospatial awareness by the user community but because it will release the TERA Tech from the more simplistic, but frequently required, terrain analysis and therefore allow them to concentrate their efforts on the more complex terrain analysis. The geospatial web services will not build themselves

but will require the input of the TERA Tech to ensure that the processes and data used are appropriate for the service offered. The TERA Tech will have to ensure that the presentation of uncertainty in an unambiguous manner is incorporated within the geospatial web services and not seen as an optional extra. While it is anticipated that the IT infrastructure on which the geospatial web services are delivered will be maintained by the communication community the maintenance of the geospatial web services will remain a geo function of which the exploitation elements will belong to the TERA Tech. It is clear that not every exploitation capability will be offered as a geospatial web services to every user, but will be designated core, functional or specialist, the latter being sourced via a Request For Information (RFI) from the TERA Tech. While the division of responsibility has yet to be established 'core geospatial web services' are likely to be provided to the general user and may include basic map viewing, gazetteer, a simple LOS or route analysis and will not require the user to hold data locally or manage complicated GIS software. Figure 5 shows schematically how



Web service schematic. (1) The user requests a CCM prediction for his vehicle, over area A at time t. (2) The CCM service calls the CCM and the appropriate data. The CCM model calls a Met Office Web Service for soil moisture prediction. (3) The Met Office Web Service returns the predicted soil moisture over area A and time t. (4) The CCM model executes and returns the resultant CCM 'map' to the user.

a potential a CCM web service could operate. For the staff user 'functional geospatial web services' will offer more tailored exploitation tools and an ability to incorporate their own data. For example the logistician may wish to undertake more complex route analysis in the form of the 'travelling salesman' question and include logistical information regarding current stock levels for re-supply arrangements, the results of which in turn may be offered as a layer within the map viewer of the core geospatial web services'. For all the remaining questions not answered by geospatial web services the TERA Tech will be called upon to apply their tradecraft and answer specific questions. For example: conducting LOS analysis from multiple points simultaneously or from a route; incident point pattern analysis; or flood prediction. In a similar manner the results of their analysis may be disseminated via a web service or included as a layer within an existing web service.

Conclusion

Terrain analysis remains a fundamental process in providing predictive information about the terrain and environment to the Military Commander enabling an informed decision to be taken. The critical role of the TERA Tech will remain and will arguably be enhanced with the delivery of NEC to UK Defence. The tradecraft and knowledge of the TERA Tech has allowed the adaptation of terrain analysis from the historic high intensity conflict right across the full spectrum of military operations. The anticipated increase and availability of fused and exploitable environmental information data will enhance the ability of the TERA Tech to support the Commander. Increased software functionality coupled with the availability of data will facilitate the provision of more complex analysis in a timelier manner. The delivery of exploitation capability via geospatial web services does not pose a threat to the role or survival of the TERA Tech, in fact in my view it will have the opposite effect, not only will the creation and maintenance of the geospatial web services require an expert but as UK Defence becomes more aware of the exploitation capabilities requests for terrain analysis will increase, as my experience showed in Kosovo. GIS and mission application systems have speeded up the terrain analysis process but as yet the human analyst cannot be removed, interpretation of the analysis and the results remains a TERA Tech function and perhaps it is time to consider deploying TERA Techs closer to the warfighters they support as part of Close Support Engineer Regiments?

¹ The original report that led to the re-trading used the term Data Technician and not the universally adopted Topographic Technician.

² As we go to print an 18-month study into the future geographic technician trade structure will draw its conclusions and what we see today will inevitably be different to tomorrow's TERA Tech.

³ The term 2.5D represents the occasion when the height or depth is recorded as an attribute and points are not captured as x,y,z features.

⁴ Time is the fourth dimension.

⁵ Probability is the fifth dimension.

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Army Benevolent Fund Military Mapping Event

Open to members of the Defence Surveyors' Association

The ABF is organising a military mapping event at Hermitage on Saturday the 3rd of February 2007. The event will commence at 1100 and finish at 1500 hours and will include presentations by Dr Yolande Hodson on the origins of Military Survey and by a serving officer on current operations in Afghanistan, Iraq and the Balkans. There will also be an opportunity to visit the major display that was produced for the 250th anniversary of Military Survey in 1997. Members wishing attend should contact Peter Walker on 01635 204433 or email peter.walker@zen.co.uk.

Surveillance and Target Acquisition with ASP on OP TELIC

By Major Richard Perry RA

When British Army “Sound Rangers” extracted from the Balkans after highly successful deployments in Bosnia, the Former Yugoslav Republic of Macedonia and Kosovo they may have expected some respite from operational commitments. In early 2003 new Hostile Artillery Locating System (HALO 2) equipment, more commonly known as the Advanced Sound ranging Programme (ASP) within UK service, was delivered to 5th Regiment Royal Artillery with enhancements over the earlier version used in the Balkans. Not surprisingly UK forces soon had the opportunity to use the equipment on operations.

Op TELIC 1 - Warfighting

For Op TELIC 1, K Battery deployed to Iraq as the Surveillance and Target Acquisition component within the 1 (UK) Armoured Division Order Of Battle. There was no hesitation in committing the new ASP system alongside its ARTHUR Weapon Locating Radar sister capability. The Sound Ranging Troop deployed initially with the guns of 3 RHA and provided its early coverage from a baseline South of Um Qasr across the Kuwait/Iraq border into the Al Faw Peninsula where 3 Cdo Brigade were to operate. This first baseline was established and operational by 200700Z Mar 03 and on commencement of the air and ground campaigns was deluged with reports and soon providing acoustic data and targeting information. The opening hours of the conflict generated in excess of 500 detections, all of which required interpretation. Three days later the ASP troop moved north with the 3 RHA Gun Group to positions south west of Basrah and the second baseline was established and active by 240800Z Mar 03. Tackling hostile mortar teams firing from mobile vehicle platforms within the complex urban environment of Basrah was difficult and Rules of Engagement restrictions did not allow for counter fires

to be cued. The conventional artillery threat was however still in evidence and able to be neutralised. At 241109Z Mar 03 ASP detected a Hostile Battery firing North-East of Basrah with impacts being recorded within the 7 Armoured Brigade Area of Operations. The range was indicative of a 155mm artillery system and it was quickly engaged with AS-90 guns from 3 RHA firing L20 bomblet ammunition at their maximum range. This strike option was reinforced by coalition air who confirmed the target. A remarkable fact about this incident was the fact that ASP located the target at a range of over 50km highlighting how the flat desert conditions and stable meteorological conditions of Southern Iraq are highly suited for Sound Ranging. This was well beyond the normal locating range to be expected. In the period until 30 Mar 03 coverage of the Divisional area was consolidated and the ASP baseline was expanded before the



ASP sensor post on Camp Dogwood perimeter during OP BRACKEN in November 2004.

“cease locating” order was given just under two weeks later.

Op TELIC 4, 5, 6, 7, 8, 9 - Stability Operations

Less than 12 months later on the 10th of April 2004, an unexpected Warning Order was received from PJHQ tasking a Battery to conduct a short notice threat-based re-deployment back to Iraq for Op TELIC 4. As the high readiness battery K Battery once again deployed to Iraq and by the end of the month operational capability was on the ground countering the insurgent indirect fire threat. The initial focus was the threat against Camp AbuNaji in Maysan Province but the threat soon migrated to the Basrah Area requiring wider coverage and deployment. The scheme of manoeuvre was simple; provide systematic and continuous observation of areas of likely enemy activity using a framework of Acoustic Weapon Locating and Weapon Locating Radar surveillance assets. A network of static ASP sensors and MAMBA radars optimised to cover areas of interest was established. The threat was now small and medium rockets (primarily 107mm/122mm) fired from improvised launchers and medium/small calibre mortars (60mm/81mm/82mm). Again ASP quickly proved its value against a demanding and challenging target set. In addition to its effectiveness against the rocket and mortar threat it also proved its ability to report roadside bomb attacks, explosions, tribal fighting incidents and other acoustic events of interest. In several instances strike options against insurgent forces has been achieved.

Op BRACKEN - Surge Task

A notable success by ASP was its support to the 1 Black Watch Battlegroup on Op BRACKEN in North Babil Province. It was deployed on the outer perimeter of Forward Operating Base Ticonderoga (more popularly known as Camp Dogwood) and ASP gave continuous coverage of the base from the 29th of October until the 2nd of December 2004 utilising up to six Sensor Posts. Within a 15km radius of the baseline it provided very accurate and very comprehensive reporting of indirect fire attacks against the point target which it was deployed to protect. 21 rocket attacks were reported on 16 separate days and based on developing firing patterns deterrent operations were able to be launched to deter and counter this threat based on the situational awareness provided by the system. A night sound adjustment mission with ASP and friendly mortars firing high explosive projectiles was used on one occasion after last light to disrupt a suspected IED. The ATO was committed elsewhere and there was a high risk to troops deploying on the ground. It was reassuring to know that the baseline was accurately surveyed in when this unexpected task arrived at the ASP command post from Battlegroup Headquarters!



Survey team on OP BRACKEN.

An Enduring Requirement

Op BRACKEN was a surge task and the majority of ASP coverage has been from static sites in support of UK fixed base locations. In addition to K Battery the other sub units of 5 Regiment RA have deployed to theatre - P Battery on Op TELIC 5 and 9; 53 Battery Op TELIC 6 and 35 Battery of 39 Regiment RA for Op TELIC 7. At least one operational baseline in the Basra Area has remained operational for every day since Op TELIC 4, in all weathers, in one of the harshest environments possible and has proved to be reliable, sustainable and very effective - no mean achievement. ASP has proved to be an invaluable capability and with the radar systems it has deployed with, both MAMBA and COBRA, it has proven itself as a versatile and capable system on both war fighting and stability operations.

End Note - ASP Survey

Surveillance and Target Acquisition units using ASP have an enduring survey requirement. To survey in the three microphones of each sensor post requires an internal distance measurement between microphones of 5cm or better and this is delivered using the Leica TC1100 Theodolite or steel measuring tape. External fixation for the entire sensor post is provided by the handheld SPGR GPS with its associated 9m PE. External azimuth is produced using a SPGR GLS routine delivering an accuracy of about 2 mils against the general requirement for 5 mils or better. Sensor post locations change regularly and are often sited on urban roof tops, on walls and in rough terrain requiring care and skill to ensure good survey. The imperative of providing the most accurate targeting data in response to indirect fire attacks ensures that soldiers take pride in their survey related tasks and responsibilities. RE Geo troops have been requested, on occasion, to enhance and confirm fixation and orientation for ASP.



Recce for an ASP sensor post on the roof of Basrah Palace – January 2005.



Recce for a microphone position on the top of a HESCO Bastion Wall at the Shatt al Arab Hotel, Basrah.

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Greetings from Christmas Past

Unit Christmas Cards

By Alan Gordon

First World War Cards



'Gunfire' in bed and officers and seniors serving a traditional roast turkey lunch to the men were, whenever possible, highlights of a soldier's Christmas Day throughout most of the twentieth century, particularly in units based overseas during the two World Wars and the 'end of Empire' era of the late 1940s through to the end of the 1960s. For much of this period there was also a tradition for units to send Christmas cards with Survey units, both Gunner and Sapper, and at least *HMS White Bear* from the Hydrographic ships, usually drawing upon the artistic skills of their tradesmen and the in-house reproduction facilities to produce their own bespoke cards and aerogramme forms. These cards provide a window on the times as the artistic style and the humour reflected contemporary fashion.

First World War cards range from the humorous, for instance, showing the Kaiser's head cartooned in a derogatory fashion, to the rather bland such as sketches of the unit's technical equipment. The 8th Field Survey Company's immediate post-war Christmas card showing the Angel of Victory, a very popular image of the time, is the only one discovered so far reflecting a religious subject, albeit their New Year's card was a rather gloating cartoon headed "Finish Johnny". The production of unit Christmas cards was not restricted to the British with both ANZAC and American Expeditionary Force examples surviving today. However, it was somewhat surprising to find that there was the time and the inclination to produce cards even during the Dardanelles campaign.

The Second World War cards reflect the changes in artistic style since 1918 and clearly show that artistic talent was not restricted to Sapper surveyors. Also, reflecting the growth of airmail, there were now Christmas aerogrammes as well as cards. It is of note that none of the cards from the Second World War include any religious imagery at all, indeed the RA card of 1944 solely illustrates the extent of the Allies advance into Europe without even a festive greeting on the cover.



Several RE Survey Company cards were based on the unit location with 19 Company freezing in Iceland in 1940 and still freezing four years later but by then in Northern Italy, although in the interim they had boiled in the Western Desert. 512 spent the entire war in Egypt and their card from 1942 gleefully shows the 8th Army chasing 'Jerry' back to Tripoli. This lighthearted approach was also evident in the greetings text of 520 Map Reproduction Section's card which included the short rhyme:

*The wish the Repro send to you
This Xmas, 1942
May ink and water never mix
and paper not play dirty tricks*

Other units, such as the No 2 Reproduction Section RE choose the safe but bland Sapper cap badge and Corps colours, a 'safe' style that continued with many units after the war.

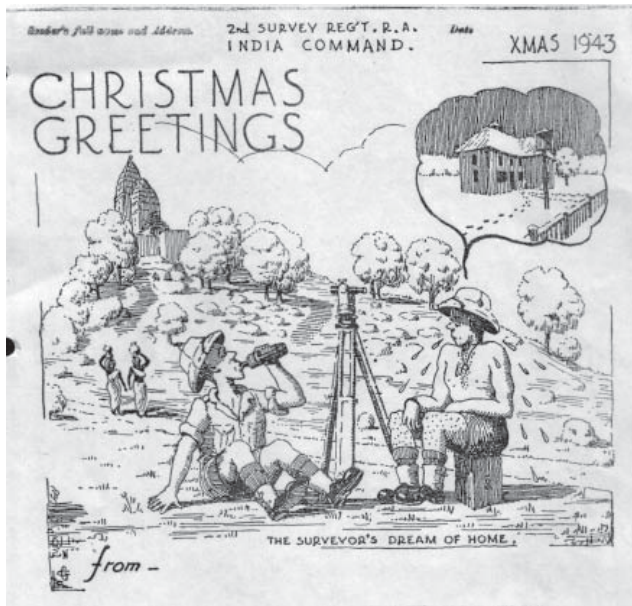
The sending of cards continued after the war with Gunner Survey cards illustrating the full aesthetic range from the 1st Observation Troop's photograph of the Troop on the move - very festive - to a traditional style card from 3 Division Observation Troop - well drawn by a driver in the unit showing that artistic flair was not restricted to the survey trades

Humour appeared to lose its popularity after the war with more 'seemly' subjects such as antique maps and Corps ciphers and crests becoming the norm. However, the latest example that has surfaced reverted to a cartoon when 42 Survey Engineer Regiment produced a card during its 12-week stint on the 1977-78 Fireman's Strike - inevitably featuring the famous Green Goddess.

The late Seventies and early Eighties saw the Armed Forces becoming increasingly concerned with costs and the use of resources and unit Christmas cards were soon seen as an unnecessary burden and were therefore removed from the Adjutant's list of 'jobs to do'.

The author wishes to thank the various DSA members who provided him with assistance with this article.

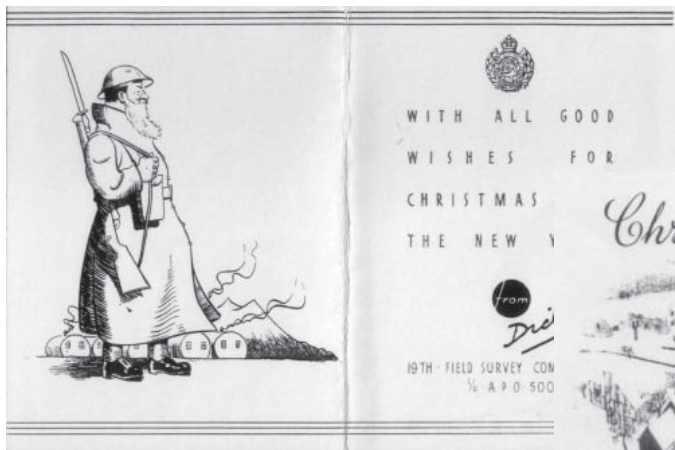
Photocopies of documents from Cpl Potter's album by kind permission of the Institute of Royal Engineers.



Second World War Royal Artillery Cards



Examples of the 'Gunner's art'.



**Royal Engineers
Second World
War Cards**



19 and 512 Company's cards reflect their geographical location and conditions at the time.



**Post War
Gunner Cards**

With Best Wishes
for
A Merry Christmas
and
A Happy New Year.



*and the Officers and
the Observations Troop*



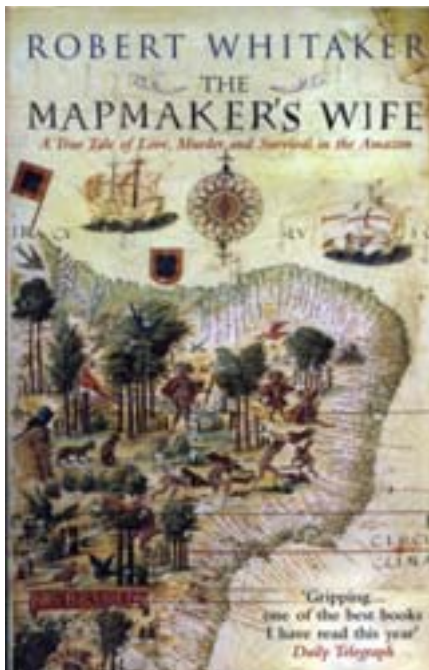
Royal Engineers
CIRCA 1910

Post War Royal Engineer Cards

A card produced by the School of Military Survey for the Directorate of Military Survey sometime during the 1950s or early 1960s.



42 Regiment's deployment on the Fireman's Strike of 1977/78 was perhaps the last time an RE unit Christmas card was produced.



Book Review

Love, death, survival. . . and surveying in the Amazonian jungle

THE MAPMAKER'S WIFE

by Robert Whitaker

Published by Bantam, price: £7.99, paperback, ISBN 0553815393

I nearly didn't read this because of the title (I would have preferred "The Mapmaker's Husband"!) but I'm glad I persevered, as this is a gem of a book.

Set in the late 18th Century, this is the tale of the race to confirm the shape of the earth. Then, Cassini had declared that the earth was prolate, elongated at the poles, whereas others held to the Newtonian theory that it was oblate, elongated at the equator. To resolve this issue a team of French academics ventured off to the equatorial regions of South America to measure a degree of latitude.

There is an amazing story of dedication and commitment to surveying the likes of which is rarely seen today. They surveyed in some of the most inhospitable regions of the Amazonian jungle battling with the weather,

mountainous terrain, infestations of all things biting and disease to achieve their goals. Time seemed to be the only thing they didn't battle against. Nearing the end, they realised their astro observations contained errors and it took another two years to complete the zenith sectors to the accuracy they insisted on. Three out of the ten survey team never made it back to France.

Jean Godin, a survey assistant, fell in love and married a Peruvian lady. He journeyed back down the Amazon to pave the way for their return to France and ended stranded in French Guiana when Peru closed their borders to his return. Eventually, after decades of absence, his wife fought to join him. The tale of her travels over the Andes and down the Amazon is stunning. She witnessed the death of both her brothers from starvation, wandered for weeks in the jungle at the point of death and somehow survived to tell the tale. Surveying has left the story by this juncture but the gripping tale of her journey to meet her husband is quite extraordinary.

The book is a slightly odd combination of surveying history for the first half and then an Amazonian 'adventure' in the second. Depending on one's preference you may prefer different ends of the book. However I found this a fascinating book from both points of view: surveying and survival. If you enjoyed 'The Great Arc' by John Keay or 'Longitude' by Dava Sobel, then rush out and buy this one.

Ruth Adams (Review first published in Geomatics World)

Military Survey - What's in a Name?

By Peter Walker

In 1997 Military Survey celebrated 250 years of history which dated back to the autumn of 1747 when William Roy began a feasibility study for a project – the military survey of Scotland. However, over the last nine years Military Survey has undergone a number of changes which have seen the title ‘Military Survey’ disappear almost entirely, firstly to become part of the Defence Geographic and Imagery Intelligence Agency (DGIA), then Defence Geospatial Intelligence (DGI) and from 1 June 2006 the Intelligence Collection Group (ICG). At the same time the Geographic Engineer Group (GEG) has become the Joint Aeronautical and Geospatial Organisation (JAGO), in recognition that No 1 Aeronautical Information Documents Unit RAF (No 1 AIDU) is now within the command. Military Survey’s only use is now in the name of the Royal School of Military Survey (RSMS) at Hermitage, which itself is now part of the Defence College of Intelligence (DCI).

These changes of names have caused much consternation and muttering in bars by many serving and retired ‘Military Surveyors’ for whom this term was synonymous with their careers within the Army. There is a feeling of loss of identity, with concerns that the professional military surveying business is being lost within the wider Defence Intelligence community. A good example of how these concerns are viewed is given in a poem read out during a recent Dinner night just before the GEG became JAGO.

ODE to GEG

*It's long been recognised you know,
By the military planner,
You can't wage war without a map
In any decent manner.*

*Know the terrain, you'll win the war
Sound advice by Sun Tzu;
Even before John Tate became
The master of the fly-through.*

*You find and fix your enemies
And then you seek to belt 'em,
With a map supplied by GEG
Or even dear old Feltham.*

*We changed our name so many times
We haven't finished yet;
EFC is tailor made
We change as fast as Met.*

*Change is healthy so they say,
Change keeps us on the hop,
But change is similar to rain
We long for it to stop.*

*For those who simply want a map
The supplier's not the point
And those of us who do the job
Have long since grasped it's joint.*

*DGI or ICG
Whichever way we may go,
Remember your noble heritage
Even when you're part of JAGO.*

*So wave to me from ICG
You really mustn't panic,
Shuffle those deckchairs one more time
Scotch rumours of Titanic.*

*It's on the bus and off the bus
With new names all the way
Just wait until the music stops
At heart we're still survey.*

*We've mapped the world on long campaigns
And won Victoria Crosses.
When fighting Whitehall warriors
We really count our losses.*

*So change the name, conceal the fame
To me it's crystal clear
Whatever's painted on that sign,
I'm a Royal Engineer.*

Whilst the organisational changes outlined above have produced uncertainties across the ranks there are very strong reasons to refute any views that the business of military surveying is losing its way. There is a very long and proud history of military surveying within the British Army. However, the term ‘Military Survey’ as a title covering the whole profession dates really only from 1941 when the Directorate of Military Survey was first established. The exception is RSMS, which can trace

its history back to 1833¹, but over the years the survey service has been directed by a variety of organisations as is shown in Table 1.

Table 1. History of Directorate of Military Survey

Year	Title of Directorate
1803	Depot of Military Knowledge
1855	Topographical Department
1879	Adjutant General 6
1888	DMI(F)
1904	Geographical Section (MO 4 Topo)
1920	Geographical Section (MI 4)
1941	Directorate of Military Survey
1988	Directorate General of Military Survey
1991	Military Survey Defence Agency



Whimsical view of a military surveyor working with the Ordnance Survey in the late 19th century.

It is clear that a professional military survey service was maintained throughout the history of ‘military survey’ (note lack of capitals). However, even just from the titles of the Directorates which had oversight of this service over the years, it is also clear that there have been longstanding and often comprehensive links between military surveyors, the operational staff and the intelligence staff. The recent tighter integration with the Defence Intelligence Staff is nothing new, but it does mean that geospatial capabilities are considered within the wider Defence operational and intelligence programmes where the needs for both environmental information and geospatial intelligence form part of the mission of the Chief of Defence Intelligence.



Military surveyors from 89 Field Survey Squadron RE working in Kenya in 1956 during the Mau Mau revolt.

¹ The title of RSMS survives on the strength of its international reputation; a very large number of countries from right across the world have had officers trained at the School, many of these personnel subsequently rising to senior appointments within their own national survey organisations.

Throughout the history of military surveying the service is most effective when it is firmly linked to the needs of operational commanders. A number of recent presentations attended by retired military surveyors and elements of the current intelligence community have clearly demonstrated this:

- At a seminar on covert military mapping held of 24th May 2006 Dr Yolande Hodson described how reconnaissance missions carried out during three campaigns conducted in the 17th and 18th Centuries combined a mixture of intelligence gathering, assessment of resources that would be available, and terrain analysis for route finding and camp construction. All this was linked to the need to gain a good understanding of the ground by construction of geographic materials which incorporated a wide range of geographic and operational details. It all had a familiar ring to the kind of integrated information and intelligence gathering tasks that take place in modern armed forces.
- At the same seminar Alan Gordon described how mapping tours of East Germany were conducted by combined intelligence and RE (Geo) teams in support of intelligence collection requirements for the British Commanders'-in-Chief Mission to the Soviet Forces in Germany (BRIXMIS). Although not an activity in the public domain at the time, this presentation clearly showed one aspect of how military surveyors and the Intelligence staff worked together during the Cold War, a theme that could be expanded into a wide variety of other activities.
- On 2nd June 2006 Dr Aryek Nussbacker from the Royal Military Academy Sandhurst War Studies Department conducted a staff drive with ICG staff covering the Second Battle of Newbury which took place in 1643. During this battle the Parliamentarian forces attacked Donnington Castle, approaching from the South. A plan to circle the main Royalist positions was completed but only with much mishap after the Royalists got lost as they had little knowledge of the terrain. In other parts of England where they had a good understanding of the ground, these type of problems were not apparent. It was clear from this presentation that even at this time commanders well understood the need to integrate their intelligence activities, including the generation of good mapping and effective terrain analysis to evaluate options for defence, offence, movement and counter-movement.

These survey activities, which were highly integrated with the commander's critical mission requirements, meant that military surveyors were working closely alongside the operational and intelligence staff, often collecting information and intelligence themselves and being intimately involved in the analytical process of making operational decisions. Comparing this to where we are today, the current extensive degree of integration of RE (Geo) personnel across operational and intelligence staffs throughout the Army Forces should allow effective services to be delivered, whether this is the provision of a wide spectrum of environmental and geospatial information to support almost all strategic defence headquarters and units throughout a theatre of operations, or precisely targeted geospatial intelligence to meet mission specific requirements.



A military surveyor – a Geo Tech – in 2006.

Operational demand for military surveyors has been rising and it continues to rise in an Army that has been reducing in size. Across the three Armed Forces approximately 400 posts are currently established within the RE (Geo) specialisation, about a third of these being in operations and intelligence branches in field headquarters across more than 40 organisations throughout the Services. Despite the reduction in size of the Regular Army within the Future Army Structure (FAS), RE (Geo) is expected to expand by 52 posts over the next two years, an increase of 13%. In addition, each year a variety of headquarters and units seek advice on changing job specifications within their establishments to add RE (Geo) personnel to their organisations. For example, in 2006 there have already been requests for five posts to be reviewed in this way. All of this clearly demonstrates that the services offered by RE (Geo) personnel are in much demand, which cannot be bad for the future of the specialisation.

To return to the original theme of ‘What’s in a Name?’ Whilst the title of ‘Military Survey’ clearly has emotional ties for many retired and serving personnel who work or who have worked within the specialisation, what is really important is not the name but the level of requirements for geospatial services. In the modern battlespace, outputs often vary in nature enormously, from the standard discrete map products familiar and paramount in the past to the highly tailored, mission specific and critically time dependent requirements for the operations and intelligence staff running today’s rapidly changing operations. In this environment geospatial expertise is highly sought after, our officers and technicians working within an expanding business.

For Army personnel the foundation that sustains the specialisation is the Corps of Royal Engineers, hence adoption of the term of RE (Geo). However, closer integration within the Intelligence community should not be seen as an issue. How the provision of environmental and geospatial information, with its much broader customer base to that of intelligence, fits into the mission and planning processes used by the Chief of Defence Intelligence still needs some thought, as does development of effective mechanisms to merge geospatial intelligence with the other intelligence feeds. However, these challenges should be seen as an opportunity to ensure environmental and geospatial outputs are integrated as effectively as possible with the Joint Operational and Intelligence Pictures. Geospatial outputs provide both a fundamental foundation layer on which all other information is referenced and a vital intelligence feed to assist the commander in making best use of the battlespace itself including the terrain, the features on it and other environmental information which will impact on operational planning. A high degree of integration of geospatial staff, particularly within the Intelligence community, will help to make this process work better. So, in conclusion, it’s not the name that’s important, but the functions that are carried out; and all of those currently in the RE (Geo) specialisation are in much demand and are extremely busy.

The “Yes.....Damn!” Syndrome

My companion whilst driving to and from meetings is invariably Radio 4 because of the variety of output which over the past few years has given me a myriad of titbits of information, some useful, most not. Recently during a routine plod home I caught the programme ‘All in the Mind’ which looks at psychology and the every day world. It was here that I discovered that I am, and have been for many years, a sufferer of a psychological phenomenon called the “Yes.....Damn” syndrome. It’s a fair bet that many Ranger readers are similarly afflicted.

This syndrome is based on the simple premise that although your diary is overflowing for the immediate future it probably looks pretty empty for 6 months time. For some peculiar reason we nearly all think that it will still be barren when the 6 months have passed by hence, if asked today to do something out of the routine; organise a village Christmas Fair, speak at a seminar or whatever, we are happy to agree as our diary says that we haven’t got much on in November! This is the “Yes” element of the problem.

Six months passes and come the first week of November we review our, by now over-crowded, diary and suddenly realise that the Christmas Fair, seminar or whatever it was that seemed such a good idea in June is now just two weeks away.....“Damn”.....and so the second element strikes! After much frantic effort and midnight oil we usually manage to deliver the promised service although with a silent vow never to agree to such things again. However, the bad news is that science seems to indicate that suffering from the “Yes.....Damn” syndrome is incurable and that those afflicted are doomed to continue to say “Yes” followed six months later by “Damn”!

Editor

British Cartographic Society/Defence Surveyors' Association

Seminar on Covert Military Mapping - 24 May 2006

By Robert Dobbie

The BCS Historical Military Mapping Group (The Greenwich Group) staged another of its series of occasional seminars supported by the DSA. This one was hosted at Portsmouth University with the main theme being Covert Mapping. And what an interesting day it was, well attended by both BCS and DSA members, indeed four of the speakers are members of the DSA. The knowledgeable audience included an Admiral and three Generals. There was also time to catch up with friends over a glass of wine, the buffet lunch and tea.

Dr Yolande Hodson opened proceedings with a fascinating presentation on geographic intelligence acquisition and collecting during the period 1743, when an English Monarch took to the field of battle for the last time, and 1763. She focussed on three specific examples: the War of the Austrian Succession, the Jacobite Rebellion and the Seven Years War.

This was a period when geographic information was collected, in a fairly haphazard way, of the Colonies and areas of interest and was collated in the Tower of London by the Board of Ordnance. However, this was also a time when topographic detail changed but slowly so information collected on one campaign provided a sound basis for another campaign a generation or two later. We were shown examples of a wide range of material from ad hoc sketches of fortifications to beautifully finished and coloured maps of past battlefields. There were also some fine panoramic views created by diligent and skilled drawing as, like today, information on fortifications, land use and 'going' was very significant to the planning of successful military operations.

Yo presented the cartographic material in an eloquent and fascinating manner, putting it into its historical perspective and almost persuading me that 'Butcher' Cumberland was actually a cultured and sensitive leader whose reputation has been misrepresented by history!

Dr. Peter Collier spoke about 'Mapping Anatolia in the 19th Century' focussing on F.R. Maunsell and Series I.D.O.W. 1522. At a time of great power rivalry the Russians were pressing forward with railway construction which would enable them to move and support armies that could threaten the Ottoman sphere of influence. This was probably the first time that the British Government funded a mapping programme in anticipation of future requirements, as maps were needed to plan activities in support of the Ottomans. One had to be impressed with the energy and skill of the work done by the Military Surveyors working with a fairly minimal amount of equipment whilst travelling about without drawing attention to their activities. Peter expressed the view that the mapping of the Western area appeared to be based on possible access to Turkish General Staff mapping, whilst the maps of the South East area were rather sparse and appeared to be based only on reconnaissance material. The question time that followed raised some interesting issues about the comparison between the British and Turkish mapping and whether there really were any 'Turkish Staff Maps'. There are some obvious areas for further research on Series 1522.

Colonel Mike Nolan focussed his presentation on Colonel S.C.N. Grant and the maps associated with him in the course of his career in Military Survey including a piece of covert mapping on which he was engaged before the Boer War.

Grant was commissioned into the Royal Engineers in 1874 and started out with the usual varied career enjoyed by RE Officers including overseas postings and much travel. In 1881 he was posted to Cyprus to become Assistant Director of Surveys and played a significant part in the production of Kitchener's one-inch map of the island. He obviously had a good eye for topography and did the hill shading on this very attractive map series. He was involved in the Anglo-Portuguese Boundary Commission in Nyasaland/Portugese East Africa, the revision of the one-inch map of Great Britain from 1893 to 1894 and the Sierra Leone – French Guinea boundary survey.

Grant then found himself in South Africa employed in the Intelligence Department at a time when war with the Boer Republics was fully expected and attempts were being made to prepare proper mapping. Individual officers were sent to carry out covert reconnaissance of the routes into the Orange Free State and the Transvaal which were published as official War Office Handbooks on the territories concerned. Grant's work included topographic maps of the area of Natal between the Transvaal and Ladysmith. The result of his work was the Map of the Biggarsberg. In the event there were insufficient topographic maps (I.D.W.O. 1223) of vast areas and only reconnaissance



Speakers at the DSA/BCS Seminar:

Peter Collier, Mike Nolan, Eddie Winterbourn, Alan Gordon, Yo Hodson, John Davies, Peter Chasseaud, David Watt

maps of the Transvaal and Natal and Communication maps for Natal. I.D.W.O. 1442 Quarter Inch was used for the advance into the Transvaal in May/June 1900 – a map which had been sketched in three months by three men with impressive skills.

Mike drew an interesting parallel between the mapping which had been prepared for the Boer War and that for the Dardanelles venture – both were considered to be inadequate, both were blamed for the lack of early success and both were criticised by the ensuing Commissions. Grant himself was questioned at length by the Boer War Commission and stood his ground regarding the lack of resources allocated to mapping. The lesson of History appears to be that people don't learn from the lesson of History!

Grant was later employed on at least three important frontier questions. He was appointed Director General of the Ordnance Survey in 1908 and continued in that post until his retirement in 1911. He was re-employed during the First World War as Chief Instructor in Surveying at Chatham. He finally retired to the Isle of Wight and died in 1939 aged 85.

Dr. Peter Chasseaud gave an excellent presentation on Newcombe's Secret Survey of Sinai which covered Southern Palestine and North East Sinai. Newcombe worked ferociously hard with five small survey parties, which included civilian surveyors from Egypt, to achieve outstanding results. Not only did he do a significant part of the actual survey work himself, but he also established a postal service to his parties and knew exactly what was being done at all times. At that time the Ottomans appeared to be a threat to British interests in the Suez Canal and Egypt, especially as they were building railways that could quickly bring troops and supplies into the area. The survey work was done under the umbrella of the Palestine Exploration Fund ostensibly for archeological surveys. However permission was sought and given by the Ottomans for the work to connect up the various archeological surveys.

Peter showed us some beautiful photographs of the rugged terrain which must have been very difficult to traverse with camels. The survey parties got some assistance from the local Bedouin, although they were reluctant to reveal the secret routes which they used when making raids on each other! The triangulation was done using a 5" theodolite with the detail being put in by plane tabling. The plane table sheets include notes about water and 'going' conditions in the margins. Because of the pressure of time the triangulation and plane table work was done almost simultaneously – only one month was allowed for each sheet in very difficult conditions. The result of Newcombe's work was 1:120k sheets printed in colour with routes, tracks and waterholes. The whole series of map sheets is quite stunning and one marvels at the technical skills of the surveyors working so fast in such a very hostile environment.

We then had an appeal from Geoffrey Hutton for information about the 'copperplate maps' of London made in 1553 – 59. Two of the printing plates are in the London Museum and one is in Germany, from a total of 12 – 15 plates. Although there were 1000 'pulls'; none are known to exist.

The maps appear to have been commissioned by King Phillippe of Spain who was consort to Queen Mary. They are beautifully executed although some street names are misspelt. The back of the plates are covered by oil paintings, two of which are of the Tower of Babel. Perhaps this was done to disguise them for the long journey from the Netherlands to Spain!

Geoffrey was interested to know if these were covert maps prepared by the Spanish King of a city that he intended to inherit? He would certainly have needed the detail that the maps provided if he was planning to take over a body as powerful as the City of London. Geoffrey hoped that members of the Greenwich Group might help locate other parts of the series and help solve the mystery of its purpose and production.

After lunch we returned to reality with an excellent tale by Eddie Winterbourn about his experiences in *HMS White Bear*, a hydrographic survey vessel with the South East Asia Command from 1944 to 1946.

Eddie's presentation closely followed his article that was published in the Summer issue of *Ranger* and it was a very real pleasure to hear his story told at first hand. He mentioned many places, whose whereabouts I do not know but whose names have a wonderful ring – Katubia Island, Karnaphuli River, Chittagong, Akyab, Savage Island, Trincomalee etc. Eddie returned home in February 1946 to resume work at the Hydrographic Supplies Establishment, Taunton. But what of *HMS White Bear*? She had played a little known but important part in the war in South East Asia and was last seen on the Medway mud flats waiting to go to the breakers yard.

Major Alan Gordon then told us the story of the map series BAOR Misc 536 – Mapping with a Mission. This was truly covert mapping undertaken between 1974 and 1990 for the British Commanders'-in-Chief Mission to the Soviet Forces in Germany (BRIXMIS). The series, which comprised 222 sheets covering East Germany, was maintained for 15 years with some sheets reaching their 4th edition. It was, rather surprisingly, designed solely to meet the specific requirements of just 11 officers and 10 SNCOs in BRIXMIS. Throughout the Cold War teams of uniformed British servicemen travelled legally across most of East Germany collecting vital first hand intelligence on the Communist forces facing NATO. For their clandestine work, the Mission's three most vital tools were camera, tape recorders and maps; the latter perhaps the most important as their accuracy directly affected safety especially if a patrol found itself in a dangerous situation and needed to make a quick escape. The standard mapping of East Germany was the 1:50K series M745 which was based on pre-war material and did not include the information that was vital to the work and safety of the BRIXMIS patrols in their customised staff cars. (The cars were modified to include belly armour, 4-wheel drive, winches, precise compasses and extra fuel tanks for a two or three day 'tour'.)

By 1974 the M745 sheets were markedly out of date and caused a number of incidents during tours. Lieutenant Colonel John Henshaw visited BRIXMIS and, as a result, a team was sent in to identify specific requirements. The outcome of this detailed work led to the proposal to generate a single-colour Tactical Information Overprint (TIO) for M745. A trial was carried out and proved to be an unmitigated success, welcomed by all, and a decision was made for the Mission to collect revision data over the entire Soviet Zone. It was an immense task to collect all the revision data and involved driving over every single road and forest track in the country (an area the size of England south of Yorkshire) except for the many Permanently Restricted Areas (PRA). A Survey Section was established in the Mission to plan and control the project and compile the revision data

Naturally the TIO included new roads, the huge new collective farms, the vast areas being mined for lignite, new power stations, large new built-up areas, dams etc. But they also included the sort of detail that was vital to the BRIXMIS teams such as UFOs (Unofficial Fly Offs), that is, points on autobahns where a tour car could make a quick exit down an embankment and escape along a track which was not passable to the trailing Stasi in their Lada! Another example was rail crossings which were marked to show whether they had full barrier crossing, half barrier, manned, automatic, lit or unlit. These were important because military equipment was moved by rail and BRIXMIS teams liked to lie back in the shadows and photograph passing military equipment, but they needed to be sure that they could not be trapped against a closed crossing by the Stasi. The last tour took place on 1/2 of October 1990 and the Mission was officially disbanded on 31st December 1990.

David Watt then gave us a presentation on The Russian World Mapping Programme. During his travels he has managed to amass possibly the UK's most comprehensive private collection of town plans and topographic maps of UK produced by the Soviets.

An article based on his presentation appears elsewhere in this issue.

The final presentation of the day was given by John Davies on Russian Mapping of the UK. The presentation built on the well-received article by John in the previous edition of Ranger and we were shown many examples of the mapping with points of particular interest highlighted and discussed with the audience.

The Russian maps were at 1:250k, 1:50k and Town Plans. John assured us that they were astonishingly accurate and we could see an impressive level of detail. They were attractive in colour and design and included interesting features not shown on the OS maps, such as military road classifications, which one would expect to see on a Russian military map. But there were also such curiosities as conventional signs which seemed to indicate on which side of a railway line the station buildings were situated. Plymouth docks were shown in some detail with soundings, whereas the OS map leaves the area blank. There were some interesting anomalies, such as a point where the Grand Union Canal was shown to be running over Ladbrook Grove!

The maps carried a very conventional History Note about sources although the best source would have been the 'host' countries own mapping, plus any other information which could be gleaned. This raised the question of Crown Copyright, but John expressed his personal view that there did not seem to be any infringement that could be proved.

It is always a pleasure to hear an enthusiast waxing lyrically about his own special area of expertise and he did commend us to his website <www.jomidav.com> for more information on this fascinating subject. I think that I still prefer the OS Landranger series because I am familiar with their conventional signs, but the Town Plans were very clear and could be useful - if only I could read Cyrillic script!

Thanks go to the BCS and DSA for arranging the day, Portsmouth University for hosting it and the Speakers who gave us such wonderful presentations sharing their special expertise with the very knowledgeable audience. We all went home a great deal wiser, having had fantastic value for our £15 fee. I very much look forward to the next seminar staged by the BCS Historical Military Mapping Group (The Greenwich Group) and hope that others will make time to attend.

Obituary

Anthony (Tony) Paget Baggs (1934 – 2006)

Tony Baggs was born in Norwich on the 17th of May 1934. He was educated at Stanford and then studied archaeology at Peterhouse, Cambridge. Called up for National Service, Tony trained as a surveyor at the School of Military Survey at Hermitage before posting to 84 Field Survey Squadron RE in Malaya where he spent much of his time surveying deep in the jungle, an area at the time very much under the influence of Chin Peng's Communist Terrorist organisation.

On return to civilian life Tony developed a career as a leading archaeologist and in 1963 was appointed to the Cambridge Branch of the Royal Commission for Historical Monuments for England. In 1971 he transferred to the Victoria County History, where he stayed until his retirement in 1997.

Tony reacted to his final illness with a practicality and stoicism devoid of self pity and died on the 31st of May 2006. Twice married, he is survived by his son and daughter.

The Russian World Mapping Programme or Uncle Joe's Leviathan

By David Watt

Sources

This article is based on my private research and began following acquisition of Soviet town plans of the UK from 1993 from the Jana Seta map outlet in Latvia.

The subject of military mapping remains very sensitive in Russia and, as significant quantities of topographic mapping are still being produced, what follows will always be a “work-in-progress”. Information, especially on the military mapping machine and its output remains classified and what is known may be expanded upon or reined in depending on political will. There is a vast and deeply researched literature (in Russian) on the history of “civilian” mapping and survey in Russia. What follows does not even attempt to synthesise this (this in itself would make a fascinating and significant contribution to English language cartographic knowledge) but is knowledge gleaned from my experience and sources found post 1993.

Thus far no outlet has admitted knowledge of a “catalogue” of Soviet/Russian military mapping. Consequently trying to assess map coverage is difficult. What follows relies on known releases of mapping, through Jana Seta, TopKart (Poland), GeoCenter (Germany), RMIB (Amsterdam), Omni Resources (US) and EastView Cartographic (US). Added to this are suppositions based on internet and other sources. Lastly “educated guess-work” has erred on the side of caution.

Much information has been gleaned through discussions with those who either worked in the Soviet machine during the Cold War, had been instructed by it whilst working in a Warsaw Pact satellite country or have written extensively on the subject. What this article does not represent is any form of resumé of the ground-breaking “map research” work carried out within the Map Research & Library Group (MRLG, MCE) between the 1960s and 1980s which a number of Ranger readers were intimately involved in. Suffice to say I was recently told that in 1945 the Allies knew the position of Moscow to within +/- 50 miles; by the 1960s MRLG had significantly improved on this figure.

Background

The current Russian military mapping organisation is the Voyenno Topograficheskogo Upravleniya (the Russian Military Topographic Directorate) or VTU. The current civilian mapping organisation is Roskartographia. Both are the current generations of long and distinguished pedigrees.

Systematic surveys in Russia were driven by the constant need to have the geographic knowledge to be able to unlock the economic and military potential that the vast Russian Empire represented. The infrastructure needed for systematic surveying was gradually put in place in the first 20 years of the 18th century but the most important date is probably 1720 when Peter the Great decreed Russia's first systematic survey, the “Senate Surveys”. These were small area surveys of districts using chain and theodolite, latitude determined by sextant but with no true “geodetic” basis. However, in an OS parallel, the maps were accompanied by area descriptions. The Senate Surveys continued to 1744, with “derived data” produced in 1734 and 1745. Surveys of land boundaries began in 1765. The boundary mapping was accompanied by “economic remarks”, written descriptions of the economic state of the land, for example, the geographical and economic characteristics of rivers and forests. Throughout the late 18th century geodetic work progressed as did attempts to codify and standardise mapping content and use.

In terms of military development, important “establishment” dates are:

- 1763: General Staff (under which military topography remains);
- 1797: Map Depot;
- 1812: Military Topographical Depot;
- 1822: Corps of Military Cartographers.

The Corps was the back-bone of Russian military mapping for the next 95 years. For the first 50 it completed huge plane table surveys of European Russia and the Caucasus at various scales and collaborated with the Land Boundary Survey Office to produce land boundary atlases. Milestone



Figure 1
 Topographical map of Moscow showing the specification used for mapping the former Soviet Union at 1:50,000 scale.

military products were the 107 sheet “Detailed Map of the Russian Empire” (1801-4) (and the first multi-sheet national map) and the 152 sheet “Special Map of European Russia” (1865-72).

From 1872 – 1917 large scale maps were produced of border areas and small areas began to be surveyed in Central Asia, Siberia, Caucasus and the Far East.

Training facilities were expanded when the Konstantinovskiy Land Surveying School was established in 1779 (becoming the Moscow Boundary Survey Institute in 1835). Facilities in Moscow and St Petersburg continued to expand to train military topographic officers and their training manuals going back to the mid 1800s are still housed in the Lenin Library.

The Tsarist legacy was a patch work of surveys and maps of strategic or economically important areas with no uniformity, some areas were superbly represented, others with nothing at all.

The Revolution added impetus to the need for good quality military mapping, ostensibly for economic development, although such products were useful for “internal” purposes as well. An organisation was required which could systematize and provide an independent capability in all aspects of surveying (and latterly satellite technology), photogrammetry, cartography and printing was required.

In March 1919 the Supreme Geodetic Directorate (VGU) was established. It was required to establish a common numbering system and nomenclature (based on the International Map of the World), to produce topographic mapping for economic development and develop the main characteristics and content of topographic maps and their making. In terms of mapping areas, these were to be the Donbass, Kusbass, North Caucasus, Central Asia and Greater Moscow coal, oil and gas fields. City mapping of Moscow, Leningrad and other main centres for detailed urban planning was also desperately needed.

Immediately it decided to adopt the metric scales for topo mapping of 1:10 000, 25 000, 50 000, 100 000, 200 000 and 500 000 and 1:1 million and, to print in colour. Although Tsarist information was used, it was densified with economic information.

Survey and geodesy started as early as 1917 and technical schools were set up between 1919 and 1921 but both became systematic only after 1923. Regional offices of VGU and geodetic instrument factories opened. The Central Research Institute for Geodesy and Cartography opened in 1929

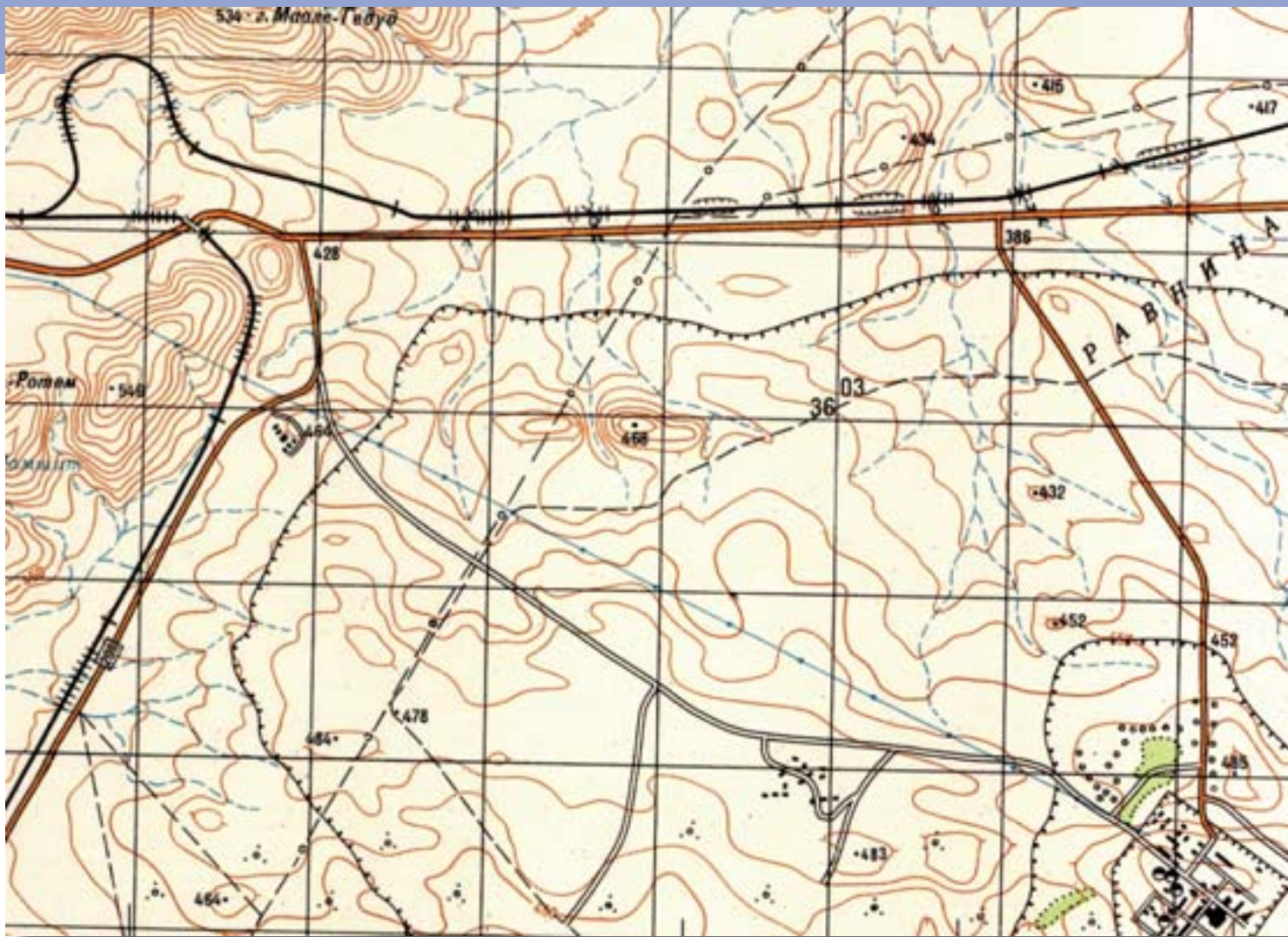


Figure 2
 Topographical map of the Dimona Nuclear Facility in Israel showing the specification used for mapping areas outside the former Soviet Union at 1:50,000 scale.

and two of the earliest aerial photogrammetry organisations (Dobrolet and Ukrvozdukhput') were brought into the Geodetic Directorate. Cartography departments of the Universities of Moscow and Leningrad were established in 1929 and 1930.

The surveying effort was headed by Professor F N Krasovskiy (of the eponymous spheroid). Work began in the European USSR and then extended into Central Asia, Western Siberia, Transbaikal and the Far East. Meanwhile sets of standardised cartographic symbols were also promulgated and developed through 10 editions during the Soviet time.

First cover of the USSR was begun at 1:100 000 in 1926 (this later became the basic survey scale) using aerial photography and triangulation and broke new ground as they included geographic descriptions of each area on the reverse authored by some of the foremost Soviet geographers (echoing the "economic remarks" of the 18th century). This reinforced the close relationship that still exists between Russian cartographers and geographers. Up to 1940 much work continued to be done standardising symbols on topographical maps between 1:25 000 and 1:100 000. The pre-war effort culminated in production of the specification for the new 1:1 million scale national map.

The Great Patriotic War presented the greatest challenge to Soviet cartographers, specifically the need for large-scale topographic mapping from the western borders to the Volga. Work was done to systematize the geodetic and control networks, the coordinate system was improved and System 42 adopted and subsequently the 1946 Baltic System of Heights (the Kronstadt vertical datum). Mapping at 1:1 million was completed for this area in less than a year. Over 80 million copies of 13,000 map sheets were printed in the first six months of the war. This compares to 60 million copies under direct GSGS control for the whole war.

Post-war two goals emerged; mapping the USSR to aid post-war development and mapping the world to help spread the Revolution.



In the USSR by 1948 simultaneous surveys at 1:10 000, 25 000 and 100 000 were all under way. The 1:100 000 series was completed in 1954 and the “Basic Principles for the Creation of Topographic on Scales of 1:10 000, 1:25 000, 1:50 000, 1:100 000” were published in 1956 (subsequently revised). 1956 – 1966 saw survey work concentrated in the Northern and Eastern areas and a second edition of the 1:100 000 series completed.

The late 60s and 70s saw huge expansion to aid economic development. Surveying and topographic mapping began at scales between 1:500 and 1:2 000 of urban areas and 1:10 000 for agricultural areas and major engineering schemes such as the Baikal-Amur railway. Research started into photo or satellite imagery mapping with Zenit, the first imagery satellite, launched in 1963. Digital mapping and terrain model experiments began as early as 1974. As was always the case, sets of technical standards emerged quickly thereafter and throughout the 1980s digital map production increased.

Current Situation in Russia

The break-up of the Soviet Union fundamentally affected survey. On the civil side, the USSR State Committee for Geodesy and Cartography was abolished as new states emerged and, in 1991, a new state service was formed called Roskartographia.

On the military side VTU’s activities and importance changed radically and in many ways it became a shadow of its former self. Up to 1991 VTU was headed by a Colonel General with two subordinate Lieutenant Generals. This became one Lieutenant General. Geographically VTU pulled its horns in as well, although there are still the five training academies in

St Petersburg, Moscow, Novosibirsk, Khabarovsk and Tomsk, the cartographic factories in St Petersburg, Moscow and Saratov, map stores throughout Russia together with various optics, survey equipment factories, research facilities and an archive scattered about! What this doesn’t show are the locations of the topogeodesic survey teams (probably numbered in their thousands) or all the Soviet era facilities which included print factories in Minsk, Kiev, Riga, Tbilisi and Tashkent and cartographic factories and map stores here and in the capitals of most of the Soviet Republics.

In terms of staff numbers, no figures are available, but in 1996 around 4,500 cartographers in Kiev were looking for work. Kiev was almost certainly not the largest factory (probably Moscow) and was one of many. It’s pure guesswork, but there could be between 35,000 and 40,000 cartographers alone. Then there are the surveyors!

The Russian and World Mapping Programme

When discussing modern Russian cartographic output it is useful to divide it, as the Russians do, into three types of mapping:

- Topographical
- Cadastral
- City plans

I will define topographical as scales between 1:25 000 and 1:1 million, cadastral as 1:500 to 1:25 000 and city plans as 1:10 000 and 1:25 000, although contoured mapping is produced down to 1:500 scale!

Before looking at the estimated figures for Soviet map production, it may be useful as a comparison to note that the Ordnance Survey’s maximum paper inventory figure stood at around 230,000 sheets before digital mapping superseded much of the large scale paper sheets.



Figure 3
Havana at 1:50,000 – produced by Cuba but to an agreed Soviet specification.

Russia Cover

Starting with topographic mapping the whole of the Soviet Union has been completed at 1:200 000, 100 000, 50 000 and 25 000. Around 25% is covered at 1:10 000, and the plan is to complete this. This totals around 814,000 sheets. An example of a topographical 1:50 000 sheet of Russia is at Figure 1.

Cadastral mapping in Russia is divided into scales of 1:500, 1 000, 2 000 and 5 000. I have been unable to find any figures either of how many settlements are covered or in how many sheets but, as a pure guess, say 20,000 sheets.

City plan scales tend to depend on the geographical extent of the city. No examples covering cities within the Russian Federation have been acquired by UK collectors (despite some energetic searches at times) but given the lack of apparent importance of some of the UK settlements, possibly 3,000 settlements could be covered say, another 6,000 sheets.

So that is possibly 840,000 sheets to compile and maintain over their own country.

The Rest of the World

Topographic

It is highly likely that the world (with the possible exception of Antarctica) was mapped completely at 1:1 million, 500 000 and 200 000. Experience counting patchy 1:250 000 NATO standard cover suggests that 1:200 000 cover might be between 20-25,000 sheets, with the other series contributing around 4,000 sheets between them.

Topographic mapping at 1:100 000 and/or 50 000 has also been released, or is believed to exist, over the whole of Europe, the Middle East, North and Central America and large areas of the rest of the world. Assuming 50% cover between both series, there might be another 200,000 sheets. An example of a Soviet produced 1:50 000 topographical sheet of non-Soviet territory is at Figure 2 and at Figure 3 is an example of a sheet produced by a Soviet ally but to an agreed Soviet specification.

Cadastral

Conjecture sets in, but cadastral mapping could have been produced over virtually anywhere that the Soviet Union had, or wished to have, influence. Say another 50,000 sheets. An example of a 1:2 000 cadastral map is at Figure 4.

City plans

Nearly eighty have been released over UK alone of which some examples were shown in the Summer 2006 issue of *Ranger*, although one could argue that as Number 2 Enemy they had an unhealthy interest in us! UK collectors are aware of cover of all western European capitals, most major cities and many much smaller ones of strategic interest. A vague extrapolation might be another 10,000 sheets.

This figure does not include all mapping produced by Soviet satellites for internal consumption but which the USSR had direct access. Bear in mind that VTU had to organise the cartography, printing, storage and distribution of all this and that for political reasons maps of one area had to be stored in another to prevent counter-revolutionaries raiding their local map store and getting mapping of their own neck of the woods.

The Final Figure

In total, it is estimated that the Soviet mapping inventory at its height amounted to a staggering 1,130,000 sheets – unbelievable!

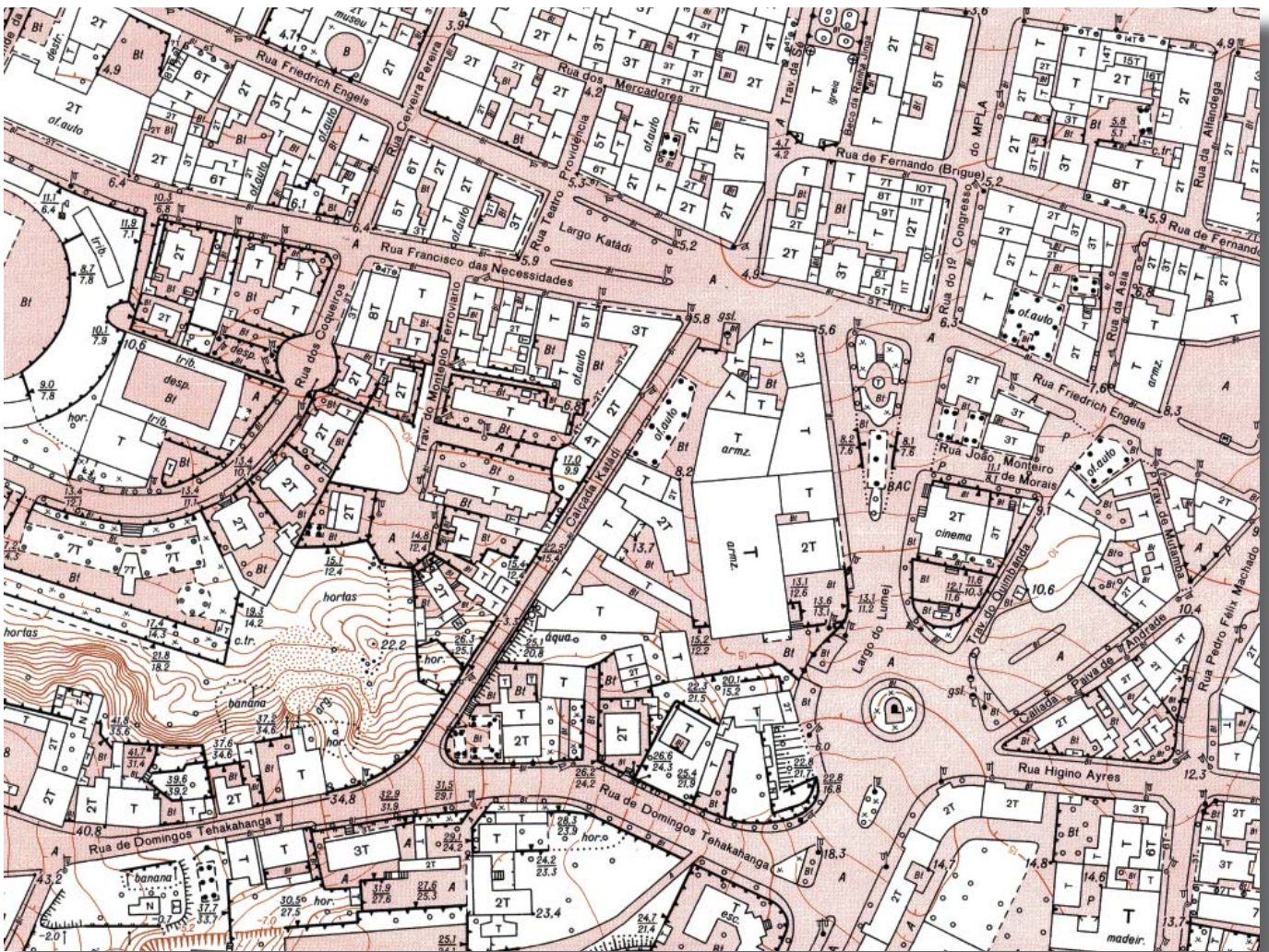


Figure 4
Cadastral map of Luanda, Angola at a scale of 1:2,000.

Kleptomaniac or Cartoholic? An enigma possibly understood...

By Gerry Zierler

Musing on why my young son Rupert was a talented junior cartographer with no encouragement from me made me think back to my own young teenage days. For fun (or was it masochistic pleasure?) I wasted countless hours diagrammatising the passenger railways map of Greater London, beating British Railways' effort by several years. Real maps played a part too in the masochism, particularly where public transport was involved, and a lifelong obsession with collecting transport maps was born.

Then came the joys of charging around Epping Forest as a CCF cadet, armed with the Ordnance Survey 7th series one-inch, plus the larger-scale escape from school by bicycle on the mid-1960s 2nd land use survey: another lasting interest ensued as more areas were visited and OS sheets collected. Later I discovered the joys of flying, and discovered that navigation was a doddle, provided I had the map and could see the ground! Later in life meant that a few spare bob were available (*before* the family started!) and an office near the British Museum meant that far too much time was spent looking at, drooling over and, unfortunately, *buying* a lot more maps in those over-priced Bloomsbury shops.

My new family learnt to tolerate surprise visits to secondhand bookshops, as the quest for atlases and maps became farther flung. Armed with the knowledge that I collected maps, friends would generously ensure that I collected still more. As the collection grew and somehow squeezed itself into a central London house, I noticed that the question increasingly asked was: why collect *maps*?

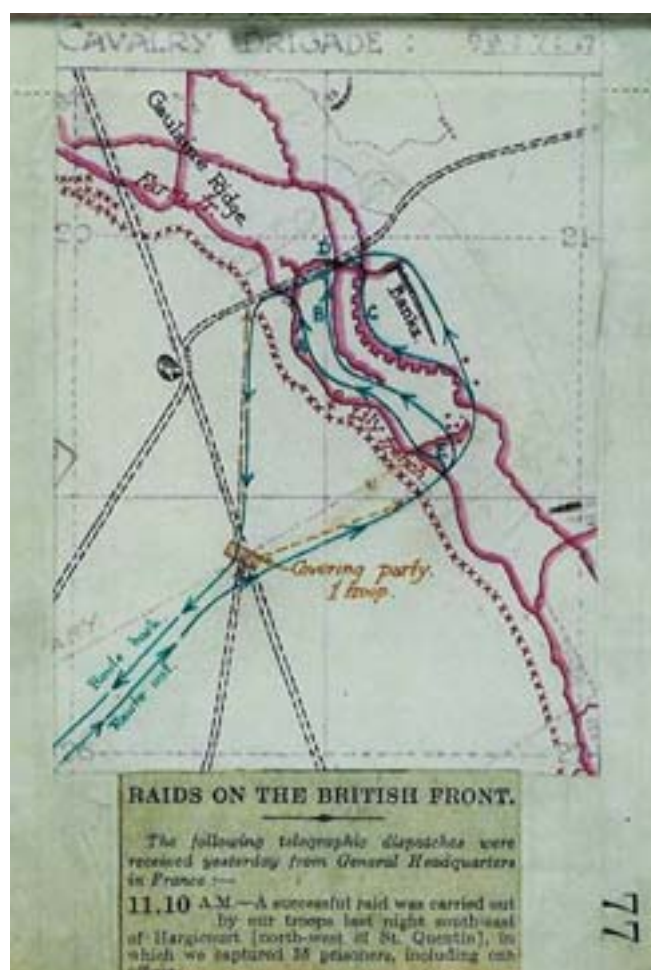
I had to think of a response and, since the collection is truly catholic and more quantity than quality, I explained to people that it was the cartography that drove me. This had the benefit of excusing me in the eyes of the cognoscenti why I didn't possess any Blaeus or suchlike, at least that weren't reproductions. As space began to run out, I started to ask *myself* the reason why!

Cartography was indeed the real answer, but since there had been no formal training I had no idea why I enjoyed it so much. Then came a revelation. I received from my mother a photographic copy of her father's field notebook from the First World War. My English grandfather Larman Luck was an engineer, architect, and brilliant artist. The original notebook is a bound pad of thin, tracing-like paper filled with his neat writing, mostly training notes, and exquisite drawings of buildings and views from his travels in action, principally around the Somme.

I had yet to visit northern France, so the places named meant nothing to me. But, at page 62, I stopped in disbelief. Above the exquisitely detailed pen-and-ink sketch was the caption: 'Bomb proof dug out -*Topographical Dept*, Foucaucourt, March 1917'. There, on the tables, were the pens, the ink.... the tools of his trade.....*the maps*.

I never knew Grandpa -he died before I was born -but now I knew more about him. Amongst his many talents *he was a Cartographer!* Did this explain my own love of maps? I think so - indeed, I hope so.

I talked this over with my news editor friend and Western Front Association member, Rob



Larman Luck's sketch of a cavalry action



Picking flowers under difficulties

Kirk, who had researched his own great-grandfather's life: his trials, tribulations, and ultimate death in the same neck of the woods, and we decided to head off to Picardy in time for the anniversary of the 'big push'.

As luck would have it, my cousin, with the now familiar generosity of friends and relations in the know about my cartoholic tendency, had recently passed to me the trench maps which his father had used in WWI. A second look showed that he and his brother (Grandpa!) had been in the same area, and at about the same time. I mused whether one had helped to make the maps the other was using. Here in my hands was Great Uncle's map of a field near German-held Bapaume, complete with gun-ranging lines and the telltale holes left by his dividers.

A week or two later, we were standing in the same field, on the same spot, holding the same map that had been held there by Uncle Bernard nearly a century before. I swear I could see the enemy in his trenches, but it may have been my imagination. What was certainly not imagination was the shrapnel which, eight decades later, no doubt had been hurled in his direction and still lay there to be picked up, in his now neatly cultivated field of action.

We set off to follow in Grandpa's footsteps, armed with the names of numerous billets scribbled inside the cover of the field notebook. We found the same farmhouses, the same canal banks, the same cemeteries he had so beautifully and painstakingly drawn. The neat sketch map of his raiding party proved that the enemy trench was now a few metres beneath the autoroute. Foucaucourt is now unremarkable, just a blink or two on the N-29 from Amiens to St Quentin, but I looked again at the detail of his map-making bunker: the 'map boxes used as food store'; the windows made of cloth (map linen?); the candles next to the many bottles of ink and rolled maps in a neat rack.

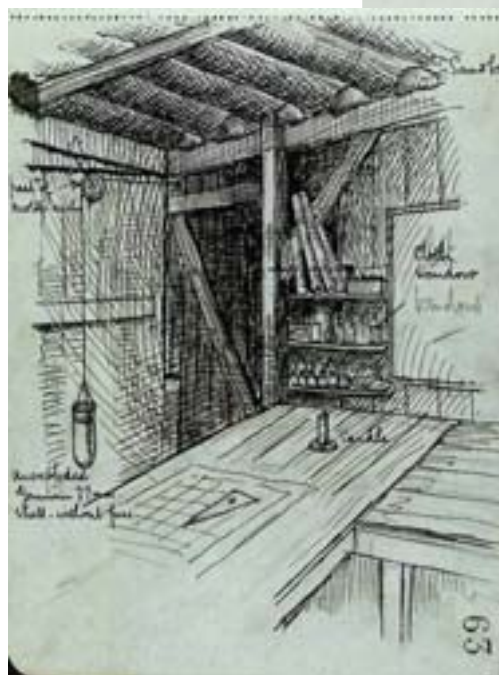
At the time, I wondered if this discovery completely explained why maps turn me on. But now, of course, we know for sure: if you look closely at the human genome map, there's a cartography gene.



More sketches from Luck's field book



Luck's humorous view of the "tin hat"



A Long Career: a Lifetime of Change

It is not the usual practise of Ranger to publish the military career of DSA members, at least, not whilst they are still living! However, we have done so on occasions in the past where the particular career pattern itself has served to illustrate specific points e.g. significant technological or organisational changes. Such is the case with the 38-year career of Major Phil Maye. It is not the enviable run of exotic postings and deployments that warrant an article but the way in which his career has included so many 'firsts' or step changes in the way things were. His story goes from plane tabling to satellite geodesy, from boy soldier to Senior Instructor with an MSc and from the Cold War to today's Middle East conflicts.....and its not a bad read!

MAJOR PHIL MAYE RETIRES AFTER 38 YEARS SERVICE

By Major (Retd) Phil Maye

A simple statement but few people will know what a full, interesting and rewarding career I have had. What follows is a brief history of my career and, by the time this is printed, I will have retired in France.

In 1968 I joined Military Survey at the Army Apprentices College Chepstow seeking to be a Cartographer, whilst I did have a good drawing ability my maths was deemed to be better and I was persuaded to become an apprentice Field Surveyor. After two years of college life I went through Royal Engineers basic training near Farnborough and then to 13 Field Survey Squadron at Barton Stacey. Here I became conversant in astronomy (azimuth determinations in *Scotland*) and drawing a large-scale plan of Lydd ranges.

In 1974 I became a junior instructor (and battery charger/storeman) at the School of Military Survey. I had my first taste of geodesy and also the astronomy experience was put to good use teaching land navigation. It was in this latter role that I was recruited to the Joint Services West-East Sahara Expedition as navigator, one of eight specialists, who drove across the *Sahara Desert*. From Senegal through *Mauritania, Mali, Niger, Nigeria, Cameroon, Chad into Sudan*, across its North West Desert ending up at Port Sudan on the Red Sea, the team then finished in Cairo after trips

to Luxor and visiting the great pyramids in *Egypt*. The film of the event called 'The Widest Beach in the World' was later used as a training film for pre-deployment to Operation Granby (1990).

In 1976 I was posted to 14 Topographic Squadron, *Germany* as a survey team leader (Corporal) which entailed many tasks over the length and breadth of northern West Germany. There were three highlights worthy of recording, all happening in 1977. The first was that I was awarded the Queens Silver Jubilee medal, one of just two awarded to the squadron, the second was to participate in the Queens' Jubilee review at Sennelager (on 7/7/77) and third being selected to be a survey leader to the British Schools Exploring Society expedition in Iceland. This expedition reverted back to basics using triangulation for control points and drawing a map of a glacier by plane tabling.



Classical field survey in 1972.

So having chalked up experience in the Desert and the Arctic it was perhaps inevitable that I was then posted to the jungles of *Belize* for 6 months. In **1980** I was posted back to Chepstow as a Sergeant instructor but was soon on the move again as survey team leader for an expedition to *Sulawesi*, Indonesia as part of Operation DRAKE (forerunner to Op RALIEGH). Several months were spent in the jungle mapping trails, rivers and temporary villages, often living with the indigenous tribesmen.



Doppler survey in 1982, Dreifontain Swaziland

In **1982** the nirvana for all Field Surveyors beckoned – a one-year posting with 512 Specialist Team Royal Engineers (STRE). Based in *Washington DC*, small survey teams would travel the world carrying out satellite surveys to determine transformation parameters to bring each country's coordinates into the World Geodetic System, together with their new-found expertise in measuring gravity, more of that earth measurement stuff. This trip took in the delights of *Wyoming to California*, tracking in *Cyprus*, Gravity in *Zimbabwe* and a bit of both in *Swaziland* and *Malawi*.

This was followed by a further teaching tour at Hermitage that led to a two and a half year tour with 512 STRE as the technical Warrant Officer. This post was definitely the technical high point of any Geodetic Surveyors' career as it was the time when Transit Doppler Satellite surveying was at its 'zenith' obtaining 1.5 metre absolute accuracy after four days of tracking, with sub-metre relative accuracy achievable after just four satellite passes - this was amazing stuff for **1984-87**. I co-wrote a technical paper with Major Mark Breach that subsequently became published in the *Survey Review*¹ and was awarded a prize for innovation and for its cost saving applications. GPS was now on the horizon and trips were made to *Ascension Island* and *Diego Garcia* to survey the new GPS tracking stations.

Having gained all this technical knowledge it was now time to develop leadership skills via a tour as Squadron Sergeant Major of 13 Map Production Squadron. After a year, I was promoted to Warrant Officer Class 1 and during a short attachment to 19

Field Survey Squadron, I was in *Kenya* mixing technical duties as liaison officer to the Kenyan Survey Department with running Adventurous Training activities in various National Parks. Nice job! A tour followed in the evolving Systems and Production Management Team at Hermitage and, following training in Informix SQL and other IT courses, the various production elements of 13 Squadron were linked and tasks were monitored through the entire production process by the management team. Then in **1990** Iraq invaded Kuwait; all of the Groups resources were utilised for the production of revised mapping and the management system was able to track each and every impression – several million were recorded during the first 3 months alone. It was also at this time that I was commissioned and became the Group's Operations Officer, foregoing the "knife and fork" commissioning course to run the production effort as well as overseeing the deployment of desert navigation training teams armed with brand new GPS receivers that were to have such an impact on modern day warfare.

And so endeth my first career with a second about to begin as a commissioned officer. Having been commissioned to Captain during the onset of Operation GRANBY whilst overseeing the mass production of millions of maps, it was perhaps fate that I would be deployed to act as UK Liaison Officer at the Theatre Map Depot (TMD) in Bahrain. Accompanied by two JNCO's we landed in *Riyadh* to the threat of an incoming Scud missile and were summarily bundled into bomb shelters donning

¹Heights Above the Geoid for Gravity by Doppler Translocation; *Breach, Maye*, *Survey Review* 28, 363-370, 1988

our NBC suits. Welcome to the war zone! Arrival at TMD showed the amount of work awaiting us – pallets of 20,000 maps, stacked 2 and 3 high, covering an area the size of a football field were waiting to be processed and there was a need to find additional storage and racking, as well as receive and dispatch the mapping. With help from additional field survey teams back from the front line, a 24-hour operation sorting the mapping went into effect, amidst the air campaign and then culminating in the ground war.

Late March **1991** and I finally started my tour as Assistant Instructor Field Survey in SMS. The successes during Op GRANBY by 512 STRE in providing accurate positions from the Global Positioning System (GPS) satellites realised the need to equip all survey teams with this new technology and hence I was to be the implementation officer. Twenty sets of geodetic GPS receivers, laptop computers (this was also new technology!), sorting SOPs and training were all part of the package. Teaching geodesy continued to be both a challenge and rewarding experience as new technology began to unfold at an alarming rate² - “the times were a changing”.

It was then **1994** and I was selected to be the Exchange Officer with the Mapping and Charting Establishment in Ottawa, *Canada*. I was a troop officer, then Operations Officer in the Geographic Support Squadron during a time when Terrain Analysts were in greater demand to support operations in the Balkan conflict and Haiti. Geodetic GPS surveying and observing gravity were still part of the squadron’s role and it enabled me to have opportunities to travel the length and breadth of Canada. Of note was a requirement to observe gravity in the Arctic islands of Ellesmere and Axel Heiberg which entailed using two helicopters observing a 20km grid of points at the same time as Danish colleagues operating along the west coast of Greenland. It was a unique privilege to work and re-visit survey sites occupied by previous survey teams of many earlier campaigns as well as areas of significant historical



Alert Station, 840kms from the North Pole.

²GPS for Photogrammetric Ground Control: The Heighting Problem; *Maye*, Price, Photogrammetric Record, (Oct 94)

interest. The work was completed in one summer and comprised 1,400 gravity stations and 50 GPS stations that subsequently filled a data void for the world geoid height model³. Similar trips to the Dawson Creek and Edmonton area with gravity meters in the depth of winter were also memorable experiences. In **1995** MCE celebrated its 50th anniversary and it was a privilege to list the survey exchange officers and SNCOs that went back to the early 1950's and recount one or two of their experiences from historical records.

512 STRE had been disbanded as an independent unit in **1996** and was reformed as a section within 19 (Geodetic) Specialist Team, a unit that had been reduced from Squadron status - hence the demise of the field surveyor had commenced. Promoted to major, I joined the Team upon return from Canada as the Second-in-Command with responsibilities for looking after the 512 element. At this time (**1997**) the section had been in Mozambique completing gravity surveys when a call from the Embassy in *Senegal* prompted a trip to offer our services in surveying airfield infrastructure. The Ron Brown surveys were already underway to resurvey navigation and airfield infrastructure by GPS. Our reconnaissance then led to *Madagascar* and an opportunity to carry out GPS road profiles north to south for the Shuttle Radar Topographic Mission (SRTM) that subsequently provided almost worldwide height data. It is with some regret that 512 was later 'disbanded' along with 19 Specialist Team and the regular deployments worldwide just became the occasional soiree.

However, Geodesy lives on, and I was able to open more doors of opportunity for the LE Officer by attending Nottingham University (**1999**) to attain a Master of Science Degree⁴. Again I returned to Hermitage, now as Senior Instructor Geodesy on my fifth teaching tour, and again was at the forefront of technology, building upon the past and looking to the future. I was also seconded to be a UK member of the NATO C3 Board responsible for Navigation (GPS etc), the army ex-officio council member of the Royal Institute of Navigation and geodesy specialist to the ABCA Topographical Working Group. My teaching duties were curtailed in **2002** to be the staff officer Doctrine and Plans in Headquarters Geographic Engineer Group; this also included the onerous duty as the secretary to the ABCA Topo WG that required my services to attend meetings in *New Zealand* and *Australia*.

In October **2002** I was earmarked for a NATO posting to Heidelberg only to be informed at the eleventh hour that the post had been cut. Appeals from Sweden for UK assistance in developing deployable geographic support consequently led to a one-off accompanied posting to Stockholm, *Sweden* for a year. Always relishing a challenge I was to become the 'International Geographic Officer' for the Swedish Armed Forces. The secondment corresponded with the transition of change of command for the Kosovo Multi-National Headquarters (South East) from UK to Sweden/Finland thus I hit the ground running delivering briefings and cost estimates on the benefits of integrated geographic support, gained approval and funds to purchase equipment within three months of arrival, recruited and trained civilian GIS specialists that had undertaken their conscription who subsequently deployed in April **2003**, six months from concept to delivery. So, in addition to *Kosovo*, my duties took me to the European Military conference in *Madrid*, NATO Geo conference in *Brussels* plus numerous presentations and training programs in *Finland* and *Sweden*.

The final tour, and one can easily understand my feelings that it was deemed a penance posting after the string of excellent tours that many would crave for. Staff Officer duties as lead on Research and Development in Headquarters Defence Geographic and Imagery Intelligence Agency (DGIA) was not top of my list. However, being again at the forefront of developing capability, having plenty of technical content and challenges, working with the Coalition Warrior Interoperability Demonstration (CWID) with our international partners has in itself been a rewarding experience. The ability to shape the future in some small way has always been a satisfying experience. 38 years of service have flown by and there are no regrets only very fond memories of a rich and rewarding experience. I am now going to enjoy retirement in *France*, to live the good life with my wife Maria and find time for my grandchildren. The travelling bug and thirst for new experiences has, for the time being, been quenched.

⁴An Evaluation of GPS/INS Integration with the Aerial Camera; *Maye*, University of Nottingham, MSc Thesis, Sep 99

³Op Bouguer (GPS and Gravity Survey in Canadian Arctic); *Maye*, Canadian Institute of Geomatics Sep 96, The Royal Engineers Journal Apr 96, Canadian Engineers Ubique No 23 Dec 95.

Obituary

Major General B St G Irwin CB (1917 - 2006)



Brian Irwin taking the salute as CO 42 Survey Engineer Regiment during the visit of Sir Hugh Foot, the last British Governor of Cyprus

Brian St George Irwin was born in Dublin on the 16th of September 1917. He was educated at Rugby School, at the RMA Woolwich and at Trinity Hall, Cambridge. He was commissioned into the Royal Engineers in August 1937.

On the outbreak of war in 1939 he was posted to the Survey Training Unit at Fort Southwick and early in 1940 joined 515 Corps Field Survey Company on its formation in Aldershot. He moved to Northern Ireland with the company, later serving for a short time as a Staff Captain in the Survey Branch of HQ British Troops in Northern Ireland.

In August 1941 he was posted to the Middle East, arriving in Egypt in November after a sea voyage interrupted by an unscheduled visit to Nova Scotia caused by a troopship

collision in mid-Atlantic. He joined HQ Eighth Army as a Deputy Assistant Director (Survey) early in 1942, where he remained until after Alamein and the advance into Tunisia. In 1943 he was in command of 517 Field Survey Company for the invasion of Sicily and the advance northwards through Italy and was twice mentioned in despatches during his tenure as Officer Commanding. Later, after a spell on the staff in HQ Allied Armies in Italy, he took command of 514 Field Survey Company, taking it to Greece at the time of the insurrection following the German withdrawal.

He returned to the UK in the summer of 1945 and held several appointments in the War Office, interspersed with a most enjoyable three years as the Survey instructor at the newly reconstituted Military College of Science at Shrivenham. In 1954 he moved to a Lieutenant Colonel's appointment as a Field Investigation Officer in the Ordnance Survey until 1956 when he was appointed to command 42 Survey Engineer Regiment based in Zygi, Cyprus. The island was at the time in the throes of the EOKA insurgency and it was here that he was mentioned in despatches for a third time. After three eventful years in command, Brian Irwin then returned to the UK for two years as Assistant Director Survey 1 in the War Office before going back to Cyprus, this time as Deputy Director Survey, Near East and Middle East. This post was combined with NATO responsibilities at HQ Allied Forces Mediterranean in Malta, and carried with it considerable opportunities for travel throughout the Mediterranean area, the Middle East and West Africa, not to mention Paris and London.

From 1963 until 1965 he was Deputy Director of the Large Scales Division of the Ordnance Survey which at the time, still occupied the old premises in London Road, Southampton, their home since 1841, and which had suffered such grievous bomb damage in 1941. In 1965, on promotion to Brigadier, he was appointed Director of Military Survey at the MOD, a post which he held until 1969.

September 1969 brought promotion to Major General and the appointment of Director General, Ordnance Survey; initially for a period of four to five years but eventually, as things turned out, for nearly eight years. This was a period of considerable change for the Department, not least of which was the decision, taken in 1974, that the post of Director General would no longer be held by a Major General on the Active List, thus bringing to an end an unbroken tradition of military direction which had lasted for 183 years.

Major General Irwin retired from the Army in April 1974 and was invited to continue in-post as a Civil Servant for a further three years. This he did, finally retiring in May 1977.

During his tenure as DGOS he presided over a period of unprecedented technical change that was to pave the way for the digital geospatial age of today. His shrewd foresight and bold approach ensured that the Ordnance Survey led the way into this new digital world and the United Kingdom's national geospatial database of today is perhaps his legacy to the nation. As well as driving the move to digital mapping, he was also instrumental in the metrication of the national mapping, pushing forward the change from the much revered 1-inch to 1:50,000 scale, a very contentious subject so close to the change to decimal currency. Major General Brian Irwin is regarded as one of the great Directors-General of the Ordnance Survey.

On 1st July 1977, he was appointed a Colonel Commandant of the Corps, was a Fellow and one-time Council Member of the Royal Institution of Chartered Surveyors and also completed a three-year tenure as Vice-President of the Royal Geographical Society.

Brian Irwin died on the 6th of March 2006, aged 88, a very kind, thoughtful man with a warm and generous personality. He married Audrey in 1939 and had two sons one of whom, Michael, also served in the Military Survey Branch of the Royal Engineers. Audrey predeceased him and in 2005 he married Pam, widow of another Sapper surveyor, Major Doug Arnott.

Obituary

Commander Nisbet Glen OBE (1920 - 2006)

Nisbet Cunningham Glen was born in London on 1st July 1920. He joined Royal Naval College Dartmouth in 1934. His distinguished naval career included: 1937 - training cruiser *HMS Vindictive*; 1938-1940 - Midshipman, *HMS Malaya*, Mediterranean; 1941-1942 - Sub-lieutenant, *HMS Eridge* as Navigating Officer; January 1943 - joined Hydrographic Surveying Service; 1943-1944 - Normandy Reconnaissance; Various appointments at sea; 1955 - joined Tidal Branch ashore as Deputy Superintendent; 1967 - promoted to Hon. Commander and Superintendent, Tidal Branch and Editor of Admiralty Tide Tables. Commander Glen retired in 1987 and was awarded the OBE in 1988.

On 8th March 2006 Commander Nisbet Glen, Royal Navy (Retd) died at his home in Curry Rivel, Somerset, at the age of 85 years.

As a young lieutenant who had specialised in hydrographic surveying he was appointed in 1943 to assist Lieutenant Berncastle who had been charged by the Naval Planners of Operation Overlord to carry out clandestine hydrographic surveys within the Bay of Seine required for the planning of Mulberry Harbours to be built off the French coast for the landing of the Allied invasion forces.

For this purpose a flotilla personnel landing craft, with underwater engine exhausts, were fitted out with the necessary depth sounding and positioning instrumentation.

The first of these surveys took place on the night of 26/27th November 1943, followed by four more during December, none of which were detected by the enemy.

Lieutenant Glen was in charge for the final survey on a wild stormy night on 31st December when two soldiers swam ashore from the sounding craft to examine the actual beaches off Arromanches. While recovering these men on a falling tide the survey craft was briefly grounded which, had not the crew managed to refloat her, would have destroyed the whole security of these vital operations.

The data brought back by these surveyors enabled plans to be developed for the building of the great harbour of Arromanches which began on D-Day five months later.

On D-Day Lieutenant Glen arrived at H-Hour in his survey craft leading in the seaborne tanks. Next morning he started laying marker buoys for the sinking of the blockships to form the eastern breakwater of the Mulberry Harbour.

In peacetime Glen served with distinction onboard a number of surveying ships and in 1969 on the arrival of the Hydrographic Office from London at the new buildings in Taunton I was able, as Hydrographer of the Navy, to appoint Commander Glen as the Officer in Charge of the Tidal Branch. He served for twenty years in this very important post, publishing the worldwide Admiralty Tide Tables.

Steve Ritchie, Rear Admiral



Lieutenant Nisbet Glen (front) and his crew in an LCP(5) off the Arromanches, June 1944

Additional Military Layers (AML)

By John Crocker, AML Service Delivery Manager, United Kingdom Hydrographic Office

Beginnings

For many years, armed forces have needed maritime geospatial data beyond that provided on standard navigational charts and publications. This has, and to some extent still is, provided on specialist paper charts and overlays.

During the 1990s Electronic Navigational Charts (ENCs) were developed. Over the same period, military systems increasingly required maritime geospatial data in digital form. In 1993 the NATO Geographic Requirements Working Group issued a survey on future data requirements. In order to complete this, the UKHO conducted a survey of the RN to identify such requirements. By the end of 1994 it was evident that more than 20 specialist digital products would be required if the needs of each type of user were considered separately. It was clear that to develop separate solutions for every system would result in:

- Duplication of many features
- An unacceptably large amount of effort being needed to create and maintain a disparate range of products

It followed that there was a need to define an integrated, comprehensive range of products to meet the needs of all military users, and an initial concept paper for AML was circulated in 1995. Following UK Ministry of Defence endorsement, this was placed before NATO in the following year.

So what is AML?

AML is a NATO wide, not just a UK initiative. Several NATO countries are producing AML data and others are keenly interested. Several countries outside NATO are also actively engaged in developing an AML capability.

Since November 2001, there have been NATO endorsed specifications for six vector products, each containing logical groups of attributed features:

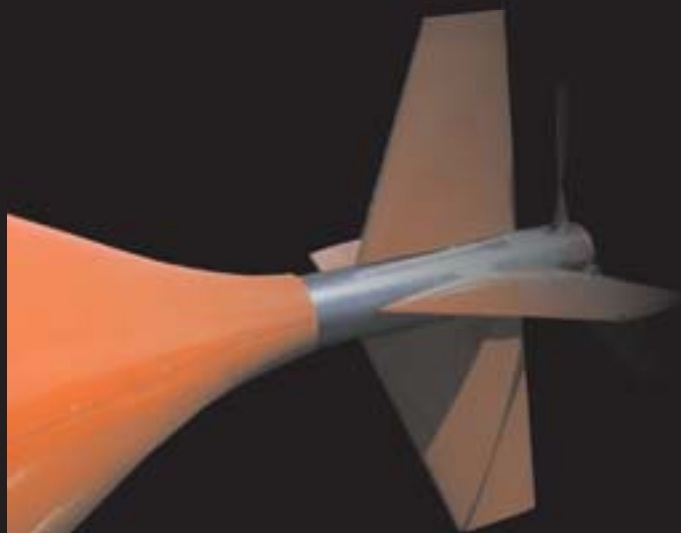
- Contour Line Bathymetry (CLB) - Bathymetric contours to support a wide range of display scales
- Routes, Areas and Limits (RAL) - including fishery and Territorial Waters limits, danger & exercise areas,
- Large Bottom Objects (LBO) - Full wrecks and major bottom object information
- Small Bottom Objects (SBO) - Mine Counter Measures (MCM) contacts
- Environment Seabed and Beach - Detailed beach and seabed environmental data
- Maritime Foundation and Facilities - Coastline and boundaries for contextualisation together with major lights and buoys and other significant features (for use where AML is used independently of a digital navigational product, such as ENC)

LBO and SBO only contain point features and are therefore considered scale free. The features in RAL are all defined by coordinates and geometry so, it also, is scale free. CLB, ESB and MFF all contain features that require differing degrees of generalisation when displayed at different scales. Nine scale bands are set out in the specifications for these products.

HUGIN 1000

An Autonomous Underwater Vehicle (AUV) for accurate and efficient seabed mapping

- Mine Counter Measure (MCM) route survey
- Mine reconnaissance
- Mine detection and classification
- Mine positioning
- High quality bathymetric mapping
- Overt and covert Rapid Environmental Assessment (REA)



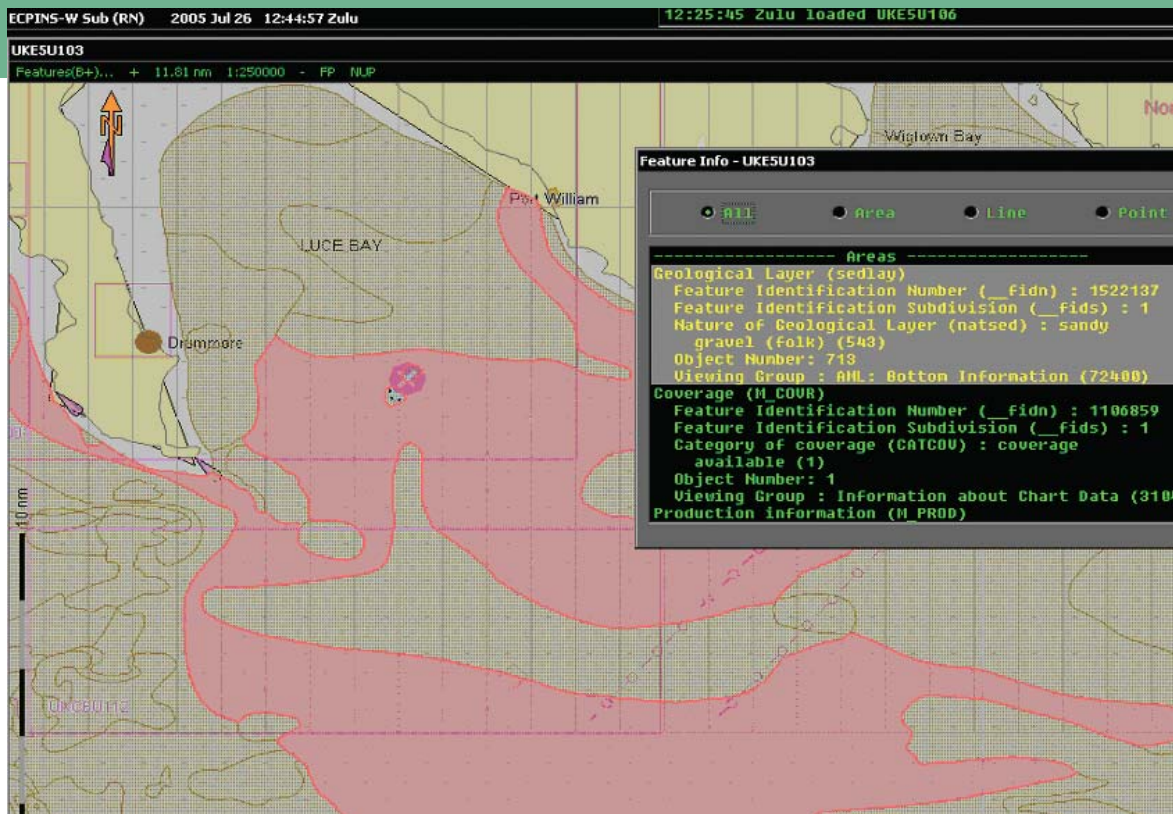
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A view captured from the Royal Navy's Warship Electronic Chart Display and Information System (WECDIS) showing the nature of the seabed. The highlighted area feature has been queried and the "Feature info" box shows that the seabed here is composed of sandy gravel

The product specifications are written in such a way that the content model is separated from the implementation using any particular carrier format. A key design aim is that AML product specifications and their implementation is based on widely accepted international standards. Currently the vector products are encapsulated using the International Hydrographic Organisation's S-57 Transfer Standard for Digital Hydrographic Data, but other open carrier formats for example GML, are being investigated.

In addition to the six vector products, there are now NATO endorsed specifications for gridded products.

- Atmospheric and Meteorological Climatology (AMC), with an implementation annex for the Gridded Binary (GRIB) format. The purpose of the AMC data set is to provide a data set describing the climatological meteorological conditions to assist with operational planning.
- Integrated Water Column (IWC) with an implementation annex for netCDF. This is intended to provide climatological data to describe the likely conditions found within the water column.

A good representation of the seabed is needed, and for many purposes a numerical model of bathymetry is more useful than bathymetric contours, so a bathymetric model product, Network Modelled Bathymetry (NMB) is being developed. The first phase of this will cover rectangular gridded (matrix) models. Consideration of Triangular Irregular Networks (TINs) is ongoing.

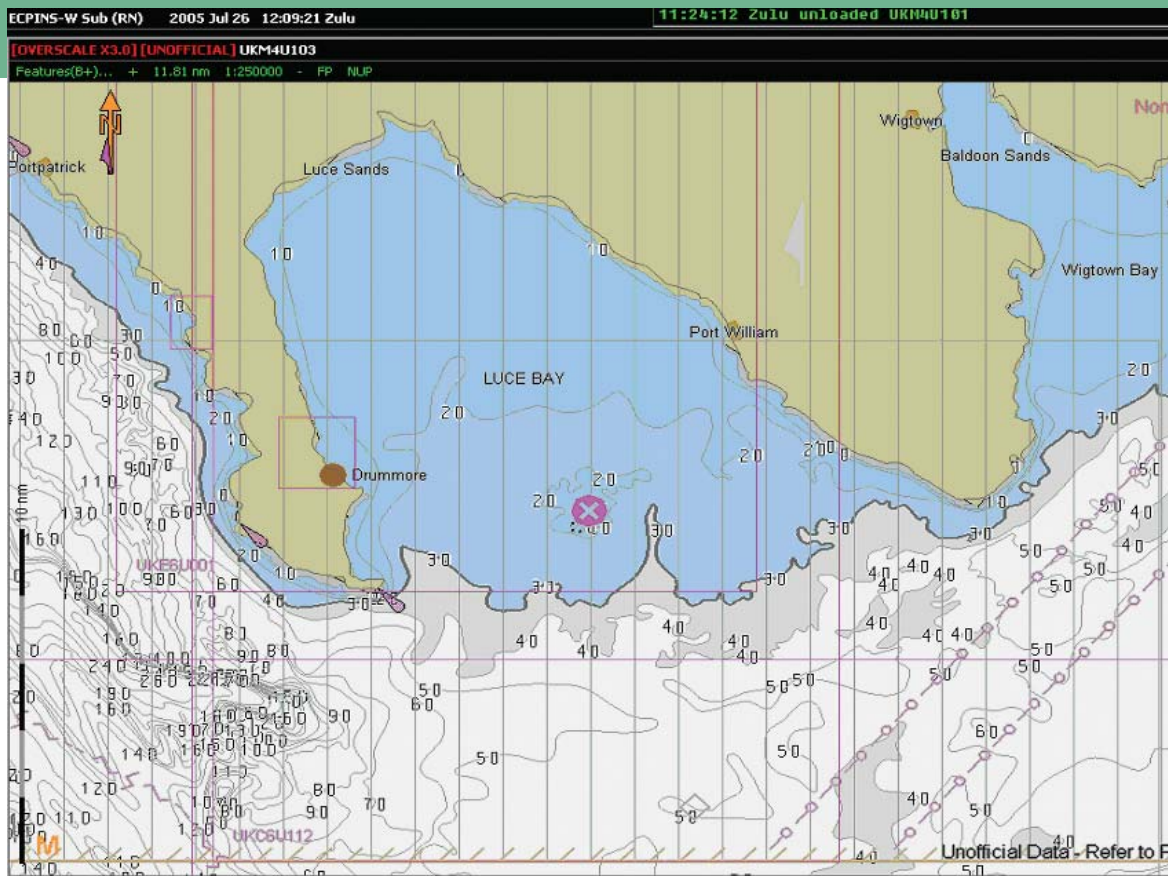
Production

The UKHO has had the capability to produce AML data in usable quantities since late 2001. The production system is based on CARIS Hydrographic Office Manager and GIS tools. Source data for AML comes from a wide variety of sources within the UKHO and external. Not all source data is in digital form so a capture process is sometimes needed.

Use of AML

AML will be used in a wide variety of roles, including Command Systems, Weapon Systems, Tactical Decision Aids and Navigation Systems to provide direct data input or situational awareness.

In practice it is likely that a user will wish to use a selection of features from several or all of the AML



Another screenshot from WECDIS (OSI's ECPINS) showing Scale Band 4 (nominally 1:1000000) Contour Line Bathymetry with Scale Band 4 Maritime Foundation and Facilities for context.

products, and will need to be able to filter the data accordingly, rather than choose to display, or not display products or “layers” in their entirety.

AML differs from ENC in not having an associated display standard, equivalent to the International Hydrographic Organisation's S-52. This is because users in different roles will require the information to be displayed in different ways, for instance, they may wish different aspects of the attribution of a particular type of feature to be emphasised by the portrayal.

Delivery and updating

AML products are intended to be supplied solely to the military customer, but similar principles could be applied to define commercially available products that would provide information not normally included in standard navigational products.

For the time being, AML will be delivered on Compact Disks. Electronic delivery is a longer term goal but is dependent on networks and communication systems with sufficient bandwidth becoming available to users.

AML will be updated. All cells will be reviewed for updating at least annually but important changes will be issued as they occur. The updating mechanism for the vector products may be either replacement cells or using S-57's facility for incremental updating.

In the interests of interoperability between units from different nations and between many different types of equipment, AML is not encrypted.

Summary

AML is a suite of data products that lends itself to display and manipulation in a rich variety of ways within user systems. Its implementation around NATO and allied nations will lead to improved interoperability and ready access to it and other data will give the warfighter an advantage. Being a comprehensive range of products it will be less costly to manage and maintain than a variety of products, each designed in a different way for individual systems.

More information about AML, including product specifications, test data and the UK AML Handbook, are freely available from the AML pages on the UKHO's Web site which can be found at: www.ukho.gov.uk/add/services.asp

The Alexander Dalrymple Award



Dr Wyn Williams makes the first presentation of the Alexander Dalrymple Award to Rear Admiral Steve Ritchie

The United Kingdom Hydrographic Office (UKHO) marked the occasion of the first World Hydrography Day by hosting a black tie Gala Dinner at Shakespeare's Globe Theatre, on the banks of the River Thames, in London. Dr Wyn Williams, UKHO Chief Executive, welcomed approximately 60 guests to join him for the evening including the Minister of State for Transport Dr Stephen Ladyman.

Following a Champagne Reception in the theatre's Founders Foyer diners were entertained first by a stunning audio-visual presentation entitled '85 Years Of World Hydrography – What Does It Mean To You?' and then by the pre-dinner speaker Pen Hadow. In May 2003 Pen became the first person to sledge alone from Canada to the North Geographic Pole without any outside assistance. It had taken him three attempts and fifteen years of single-minded dedication to achieve this remarkable achievement. His graphic accounts

of swimming through ice water, the effects of extreme sub-zero temperatures on the human mind and how to make yourself less attractive to a hungry polar bear were both entertaining and inspirational.

To celebrate World Hydrography Day, Wyn Williams announced the launch of the 'Alexander Dalrymple Award', commemorating the man who, following orders from King George III, established the UK Hydrographic Office in 1795 and is renowned today as a leading figure in the world of hydrography. Dr Williams was delighted to make the inaugural presentation of the award to DSA Life Member Rear Admiral Steve Ritchie for his exceptional devotion to World Hydrography who still continues his commitments of supporting and promoting the work of the UKHO worldwide. It is anticipated that the Alexander Dalrymple Award will become an extremely prestigious international annual award within this sector.

In parallel with the Gala Dinner, the UKHO also marked World Hydrography Day with exhibitions and talks at its offices in Taunton, on board Royal Navy ice patrol ship *HMS Endurance* in Leith in support of the Antarctic Treaty Consultative Meeting, the National Marine Aquarium (Plymouth), the National Maritime Museum (Greenwich) and onboard *HMS Scott*, in Boston, USA.

“Maps & Surveys 2007” The DSA 80th Anniversary Seminar

In order to mark and celebrate the 80th anniversary of the foundation of the Sound Ranging Association, the forerunner of the Field Survey Association, now the Defence Surveyors' Association, the Association is organising a seminar on military surveying and mapping to be held at Denison Barracks, Hermitage on Saturday the 2nd June 2007.

The seminar will probably run from 1000 to 1700hrs during which seven 40-minute presentations will be given on a variety of subjects across the spectrum of military surveying and mapping in the twentieth century, with perhaps one session devoted to current events. It is hoped that there will also be a map display to mark the 25th anniversary of the Falkland Islands War. Tea and coffee breaks and a finger-buffet will be provided.

Further details, including costs will be widely promulgated in due course including in this newsletter. An audience of only 80 can be accommodated in the lecture theatre. Bids will be accepted on a first come basis. Provisional bids may be made immediately to Mike Nolan on (01635) 253167 or maptnolan@googlemail.com.

Geo People



Mike Robinson

Chief Executive United Kingdom Hydrographic Office

Mike Robinson (42) has been appointed Chief Executive of the UK Hydrographic Office (UKHO) from the 19th of July 2006, succeeding Dr Wyn Williams, who retires after five years in the post.

For the past nine years, Mike has been at the head of international businesses that employ leading edge technology in their marketing, investment and portfolio management activities. He joins the UKHO from the HBOS Group, where he has been instrumental in building their European Insurance and Investment business, initially as Chief Executive, Clerical Medical International and more recently as Chief Executive, HBOS Europe Financial Services.

“Mike’s selection underlines the importance attached to the challenge that UKHO faces in the digital marketplace, both by the Ministry of Defence and by the UKHO Board”, said David Palmer, chairman of UKHO.

Commenting on his appointment, Mike Robinson said: “I am thrilled both by the challenge and the opportunity presented by the UKHO. It is a world leader, with a globally renowned brand and a long tradition of excellence backed up by the talent and experience of its staff.”



Wing Commander Philip Speedy BSc RAF

Officer Commanding No 1 AIDU

Wing Commander Phil Speedy took command of No 1 AIDU on the 10th of April 2006. Phil attended Fitzmaurice Grammar School and completed his formal education at Nottingham University graduating with an Honours degree in Metallurgy and Materials Science in 1979.

Following a 12-month period working in the steel industry, he joined the RAF in August 1980, and, following Navigator training at RAF Finningley, was posted in 1982 to No 100 Squadron at Wyton flying five different marks of Canberra. In 1985, Phil volunteered for Search and Rescue duties and, after successfully completing the Search and Rescue training course, he was posted to RAF Manston in Kent as a Navigator/crewman on the Wessex helicopters of No 22 Squadron. In 1988, he was posted to the Department of Initial Officer Training at the RAF College Cranwell where he served as a Flight Commander, the Squadron Adjutant and finally as the Squadron Training Officer responsible for the standardisation of both students and staff. In 1990 Phil returned to flying duties on No 22 Squadron at RAF Valley again flying the Wessex in the Search and Rescue role until 1992 when he was posted to No 84 Squadron in Cyprus flying the Wessex which provided a mixture of Search and Rescue and Garrison support. During this tour, Phil was appointed to the post of Deputy Squadron Commander.

1995 brought a posting to RAF Benson as Flight Lieutenant Operations and the following year, on promotion to squadron leader, he was posted to the Support Helicopter Force Headquarters at RAF Benson working for a NATO command from the UK. During this appointment he served on Op AGRICOLA in Albania providing support to 32 helicopters from 20 different nations. In 1999, Phil was posted a short distance to command the Operations Squadron at RAF Benson. In 2001, after a 3-month period of project work developing the support helicopter force station structure, he was posted to the Joint Helicopter Command at HQ LAND and was responsible for tri-Service helicopter provision to Op JACANA and Op TELIC. In 2003 he was posted to HQ Personnel and Training Command as the Staff Officer to Director Plans and, following a detachment to Afghanistan on Op HERRICK during late 2005, he was promoted to wing commander and posted to command No 1 AIDU in April 06.



Commander A K Waddington Royal Navy

Commander HM

Andy Waddington was born in Canterbury in 1963 and was educated at the Simon Langton Grammar School. He joined the Royal Navy as a Naval College Entrant in 1983 and joined the Fleet in 1987 having graduated in Systems and Management on the Navy's Nomination scheme at the City University, London.

After completing the Hydrographic Officers' Basic Course at the Hydrographic School, he joined *HMS Fox* as the Wrecks Officer, the first of a series of appointments in Hydrographic ships gaining experience of bathymetric and oceanographic surveying. Navigating duties onboard both *HMS Beagle* and *HMS Herald* in locations as far ranging as Rio de Janeiro and St Petersburg followed.

Following further training as a surveyor in 1993 and a period of intensive surveys in the Dover Straits, he was sent on an exchange appointment with the Royal Australian Navy for 2 years. During this time he was fortunate enough to circumnavigate Australia twice and conduct large scale surveys in the Great Barrier Reef. On return to the UK, he was appointed to *HMS Herald* as the Executive Officer and again deployed, this time conducting surveys in the Gulf, the Mediterranean and the North Atlantic.

In 1999 he joined the Mine Hunter *HMS Walney* as the Commanding Officer and deployed to the Mediterranean, the Black Sea and the Adriatic as part of the NATO Mine Countermeasures Force Mediterranean. A thoroughly enjoyable period in Command was rewarded with the penance of 2 years as the Appointer for HM Officers at the Naval Manning Agency. Selected for promotion to Commander in 2002, he graduated from the Advanced Command and Staff Course in 2003 and assumed Command of *HMS Echo* in March 2004. The next 2 years were spent predominantly in the Northern Arabian Gulf conducting surveys around the Oil Platforms and the approaches to Basra as part of the redevelopment of Iraq (and have been well reported in this journal), although the programmer found time to send the ship to the North Atlantic for the 05/06 winter. He took up his current appointment as Commander HM in the Devonport Flotilla in April 2006.

Andy and Kate married in 1987 and have 3 children who ensure that their parents have absolutely no spare time for hobbies. The whole family enjoy walking on Dartmoor near their home in Tavistock, have become keen spectators of football, cricket and swimming, and are well practiced in the art of listening to budding musicians massacre well-known musical compositions.

Follow The Sapper

An Illustrated History of the Corps of Royal Engineers

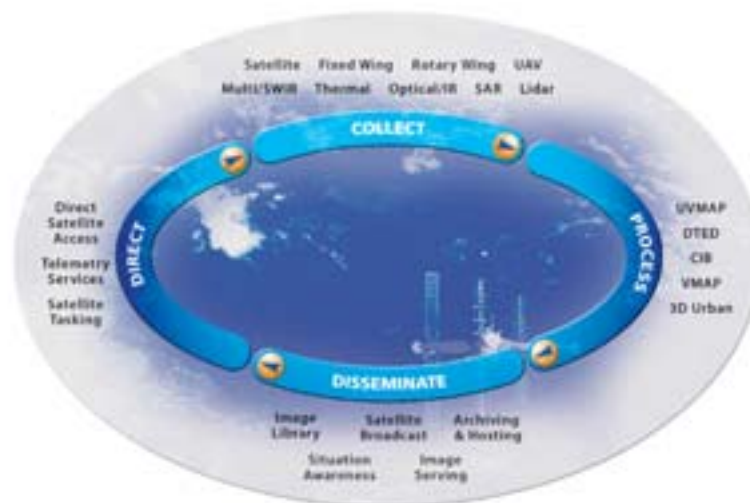
The Institution of Royal Engineers has just published a superb "coffee table" book telling the story of the Corps from its early origins through to today. Written by Gerald Napier, former Director of the Royal Engineers' Museum and author of Sapper VCs, it is lavishly illustrated and includes many of the Corps' paintings and photographs of items from messes, the museum and library including one showing the Military Survey 250th Anniversary Silver Centrepiece that was presented to Military Survey jointly by the DSA and the Corps. The text tells the story in a simple, clear and very readable fashion, this is the book for those who would probably not consider reading the official Corps History but who, nevertheless, have an interest in the Sappers.

Survey and 'Geo' get a very fair representation appearing both in the chronological chapters, as fits the story, as well as having two dedicated chapters. Among the many maps included is the one drawn by Ranger designer, David Johnson, to commemorate the end of the Gulf War. This book should be on every Ranger reader's Christmas list. Details for purchasing it are included in the advert elsewhere in this issue.

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The Afghanistan Country Stability Picture

By Staff Sergeant Will Robinson RE

Introduction

The Afghanistan Country Stability Picture (ACSP) is a project being run by the Combined Joint Engineer Branch (CJENG) in HQ International Security and Assistance Force (ISAF) to gather information on Reconstruction and Development (R & D). Its aim is to provide HQ ISAF with situational awareness of projects and to show what money is being spent where in Afghanistan. With the help of the ACSP the Staff can pin point where best to target limited resources and help with the overall improvement of Afghanistan.

GIS technology lends itself particularly well to situational awareness of an area of operations and has been used to great effect in recent operations such as Bosnia and Kosovo. However, with the advent of digitisation and advances in technology we have seen the geographic community forced to move the game on in order to provide more than situational awareness software (in the NATO arena iGEOsit, and shortly, C2PC). The question that we – the Geo community - have to ask is: *'What can we provide that these bespoke situational systems cannot?'*

The ACSP Team



The ACSP Team

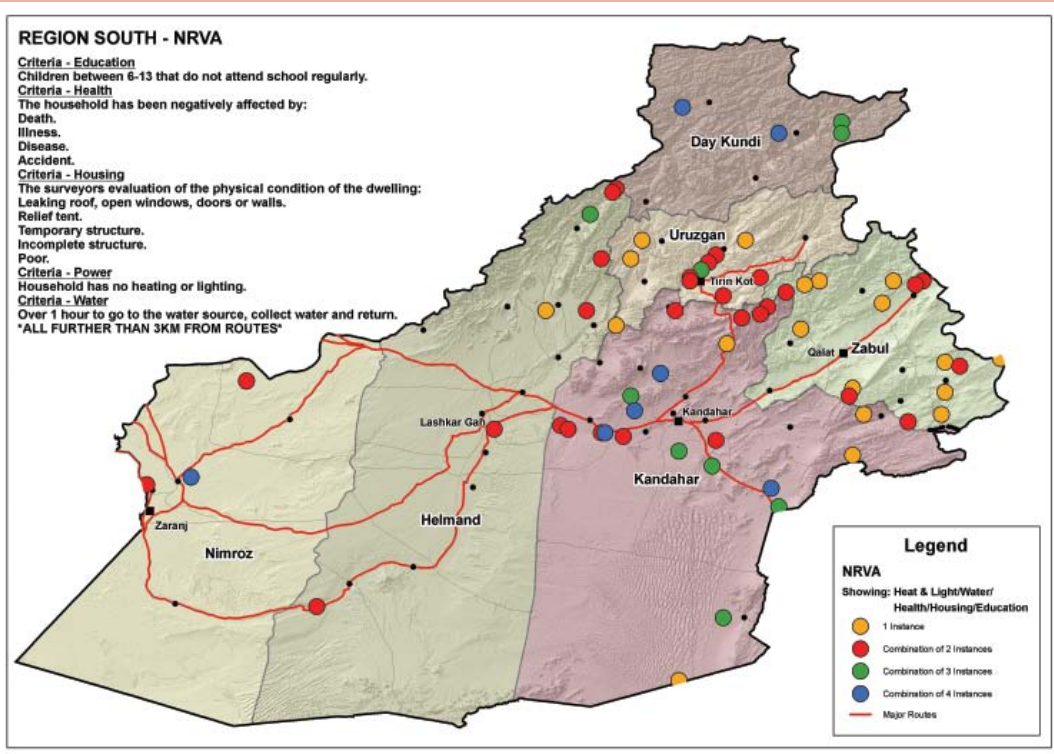
HQ ISAF IX Geostaff has been refocused into two distinct areas – the ACSP and the Geo Cell. In the ACSP team there is a Major, Staff Sergeant and two soldiers. Also in the office are the Chief Geographic Officer and an American Major working on development issues. This team has been augmented by Sappers from the Geographic Support Group (GSG) based in Camp Souter, Kabul who concentrate on data management, acquisition and preparation. They use two Deployable Geographic System (Light) (DGS(L)) with the usual GIS suite of applications and MS Office for data manipulation. With the addition of ArcPUBLISHER the ACSP is sent to Regional Commands (RCs), Provincial Reconstruction Teams (PRTs) and other interested parties in ArcREADER format complete with viewing software and example products – giving those at the tactical level real R&D situational awareness.

New Ground

The ACSP has now broken new ground in Afghanistan, the Deputy Special Representative of the Secretary General of the United Nations Assistance Mission in Afghanistan (UNAMA) recently declared at an R&D Working Group that the ACSP was incredibly useful and that all players should contribute and subscribe to it. Whilst to a military force situational awareness seems an obvious goal, to the International Donor community and a Government with limited capacity its value is no less obvious but, the implementation has presented significant challenges. The Government of Afghanistan in particular have recognised the value of this product and has embraced it within its long-term goals.

With the final stages of NATO's expansion over the whole of Afghanistan imminent, the ACSP has provided information on National Programs and the levels of investment and project activity in unstable areas, providing direction on where efforts could be focused to ease transition from the Coalition to NATO.

A great deal of effort has gone into the acquisition of data, which has proved very difficult to obtain. To name but one frustration - communications over long distances in Afghanistan are, at best, *very* difficult. The Chief Geographic Officer and SO2 ACSP have visited Ministries, donors and NGOs and opened channels of communication which are now delivering information which is relevant and current. The Sappers from the GSG have been a vital link in the production of the ACSP as the data question has been absolutely vital in providing answers to the Chain of Command. Multi criteria analysis on vulnerability has been conducted along with simple portrayal of Facts and

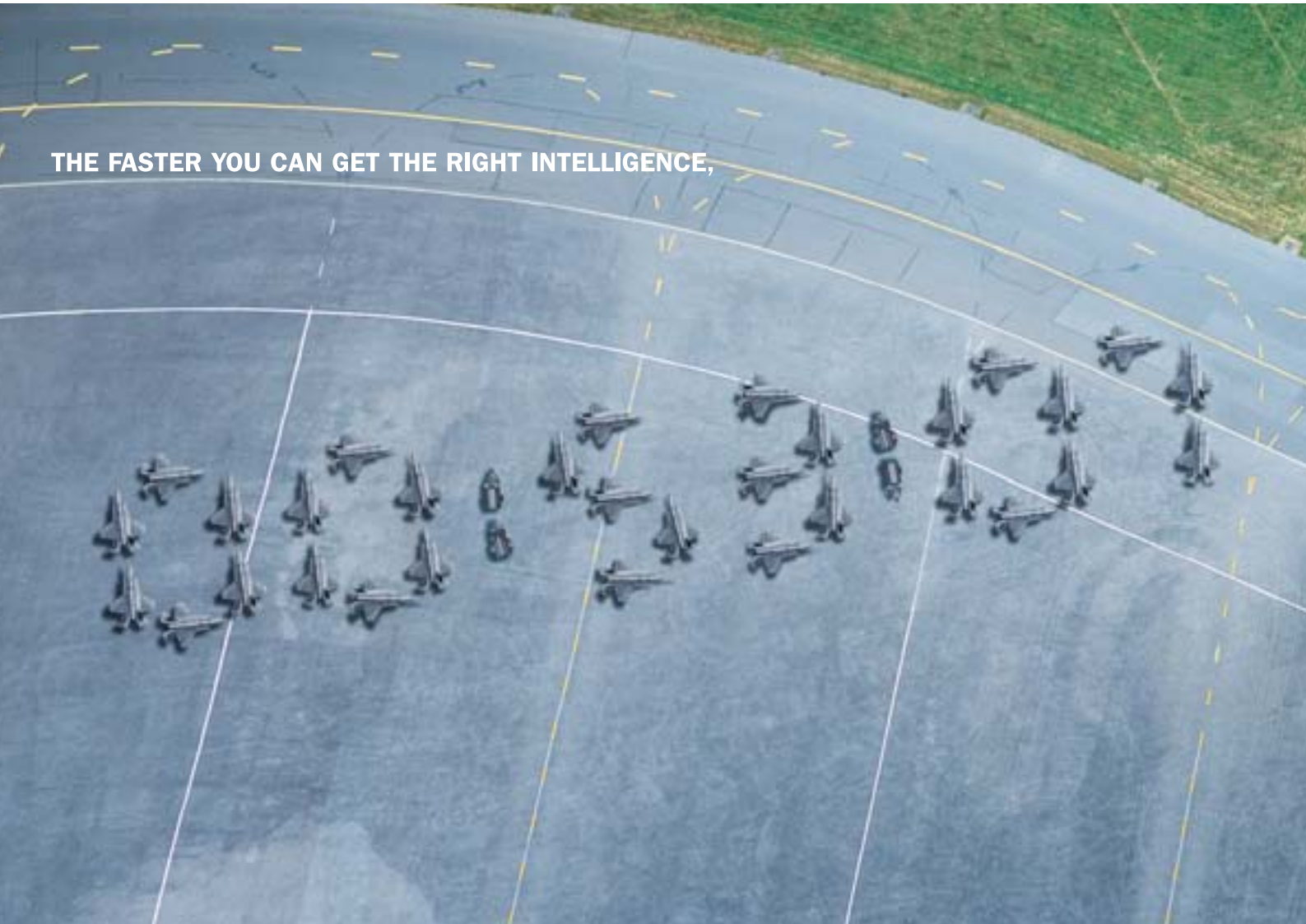


NRVA Multi Criteria Analysis

Figures and the GIS ability to analyse has been put to the test. The results have been well received and seen as novel and new in a theatre with little organic GIS capacity.

The integration and manipulation of the National Risk and Vulnerability Assessment (NRVA) was an area that opened eyes to the capability of the ACSP Cell. This study is a measure of vulnerability

THE FASTER YOU CAN GET THE RIGHT INTELLIGENCE,



and where need is greatest. The World Food Programme and the Central Statistics Office of the Ministry of Rural Rehabilitation and Development (MRRD) worked together to produce the 2005 NRVA. This is the second such survey and asks 30,000 households across Afghanistan questions in 18 different sections, including accessibility to drinking water, energy, food and income. With a spatial reference for each settlement these results have been added to the ACSP database and the living standards of households can be displayed e.g. how far is it to your main drinking water source? When combined with where projects have taken place, where they are planned and combined with other indicators a picture starts to emerge. With the use of multi criteria analysis the data takes on a new dimension and identifies where there is real vulnerability.

Where Is The ACSP Now?

R&D has an opportunity to ‘fill a gap’ and the ACSP has been heavily tasked to show where projects may have been suspended due to security problems and where vulnerability exists and therefore

where project activity could be concentrated. It is an accepted ISAF tool for showing where R&D is successful, held up and really needed.

Currently CJENG supplies the ACSP to all RCs and PRTs for validation and to provide spatially enabled R&D situational awareness, even where there is no specialised GIS equipment or Geostaff.

Where Is The ACSP Going?

The Government of Afghanistan has recognised the value of the ACSP and is in the process of trying to build capacity so that it might develop it into the Common Monitoring and Reporting System (CMRS), a



Example ACSP Output

tool for web-enabled queries on Afghan-wide R&D activity. The concept calls for independently maintained databases from major players such as USAID, ISAF, and MRRD etc to be fed into a central server and then geospatially enabled to be displayed in a Geographic context. This is in its infancy with a contractor only now starting to scope the problem and work towards a solution – for now the ACSP will fill the gap.

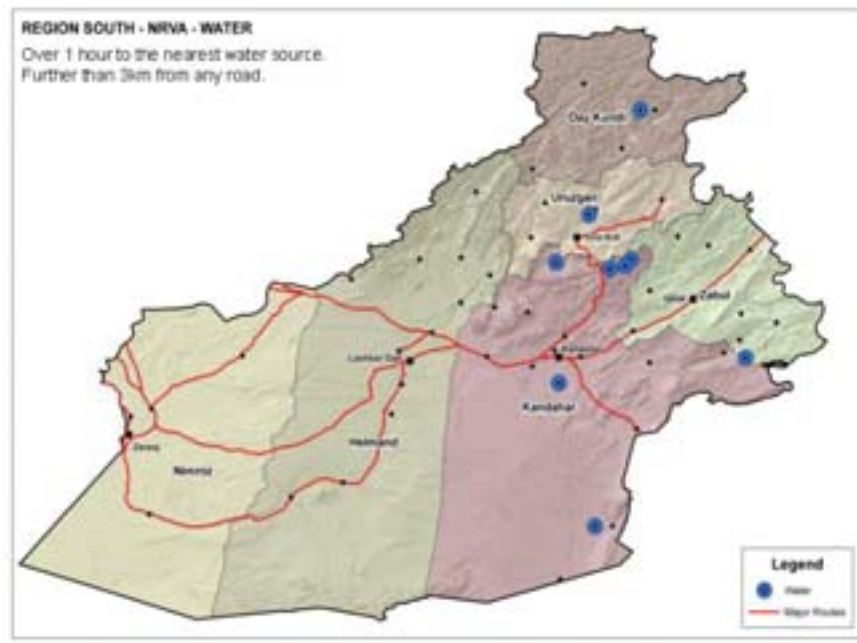
ACSP core business is to fully understand the R&D efforts of ISAF RCs and PRTs. This is essential in order to gauge success and continued need at the tactical level, and to focus on where ISAF can best assist in the overall situation. The wider R&D picture must still be monitored and understood in order to offer support to Central Government and other actors in this arena.

Conclusion

Afghanistan remains a country facing many difficulties but it is moving forward. The ACSP is a small initiative born out of the need for CJENG Branch in HQ ISAF to understand the R&D picture. GIS with its inherent ability to paint a picture and perform and present analysis has assisted with the planning and execution of ISAF participation in Donor activity. The Government of Afghanistan has been struggling with a lack of understanding on who has been spending what where – and has not had the capability to present that information in a graphical format. Whilst various Ministries have understood their own part of the puzzle, that information has not been shared with the wider audience.

GIS has provided a relatively simple solution that gives situational awareness, and the ability to analyse where there are gaps and vulnerabilities, and where people can best be helped and assisted. Work in the ACSP Cell has been intense, interesting, demanding, frustrating, enlightening and

rewarding. Soldiers more familiar with terrain analysis functionality have had to adopt a totally different stance. It has been refreshing for all concerned and should the CMRS become a reality, something that ultimately will be very rewarding. From a start point where individual Ministries and Donors had a vague idea of R&D activity we now see the birth of a concept which sees a clear picture available to all that will be updated and maintained as Afghanistan develops further.



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Soundings from The Devonport Flotilla

By Lieutenant Commander Phil Payne RN

The last report from Devonport focused on the continued change that was happening throughout the HM Division of DEVFLOT. Although change is an inevitable part of modern life the last six months have been relatively stable in the Devonport HM Division allowing the Ships to concentrate on their tasking in hand and refining operating procedures, while on numerous exercises and deployments to ever more exotic and far flung parts of the world.

HMS Scott left the UK in late April for a 4½-month deployment to the East Coast of North America. Her main tasking was to continue her ocean surveys in support of the submarine community, of which she completed some 67,296 square nautical miles. This is an area almost the size of Germany but is still, apologies for the pun, a mere drop in the ocean, with many decades of work remaining to map just the North Atlantic let alone the other oceans of the world. While deployed she made several port visits to help in varied celebrations. New York Fleet Week saw the Ship's Company enjoying the, at times, over-whelming hospitality of this city still reeling from the shock of 9/11. It also saw 40-foot high images of the Commanding Officer, Commander Steve Malcolm on large screens in Times Square as he gave live TV and Radio interviews. *Scott* also took part in the Windjammer Sea Festival in Boothbay Harbour, Maine and the centenary celebrations of the final departure of British Forces from Canada while alongside in Halifax, all of which continued to show the strong maritime links we have with our North American allies. Now alongside in Devonport undergoing a maintenance period she will deploy again in early November to round the Cape of Good Hope and continue work in the Indian Ocean.



HMS Scott in heavy weather

HMS Echo left the UK in the middle of May and headed out to the Arabian Gulf for a three month spell surveying a number of critical navigation routes and the area around the two main Iraqi oil platforms, Al Basrah and Khawr Al Amaya oil terminals (ABOT and KAAOT). This work not only stretched her hydrographically with much of the work requiring the use of her survey motor boat due to the very shoal depths, but also required the crew to be constantly alert to the threat of terrorist attacks not only against themselves but also the oil platforms. While in the Northern Arabian Gulf a ceremony took place on the 8th of August, when the Iraqi Navy received new charts of the area and approaches to the Port of Umm Qasr. The recently published charts are the outcome of two years' work by *HMS Echo*. This Gulf area is a vital shipping conduit to Iraq and the completed surveys will give the region the opportunity to increase its merchant shipping traffic.



Handover of charts to the Iraqi Navy

HMS Echo is currently acting as the Tasking Authority for Mine Counter Measures operations as part of The Five Powers Defence Agreement Exercise Bersama Padu off Singapore. From there she will continue to work in and around the South China Sea including visits to Vladivostok and Yokasuka before returning to the UK in June 07 for her five yearly docking period.

HMS Enterprise started the period working in the Arabian Gulf before heading back to the UK in the middle of May. After conducting an operational sea training period and maintenance period she has joined the VELA Deployment, first acting as Mine Counter Measure Tasking Authority Platform during Exercise Grey Cormorant around the Cornish Peninsula and then as Advance Force Commander for Exercise Gold Eagle

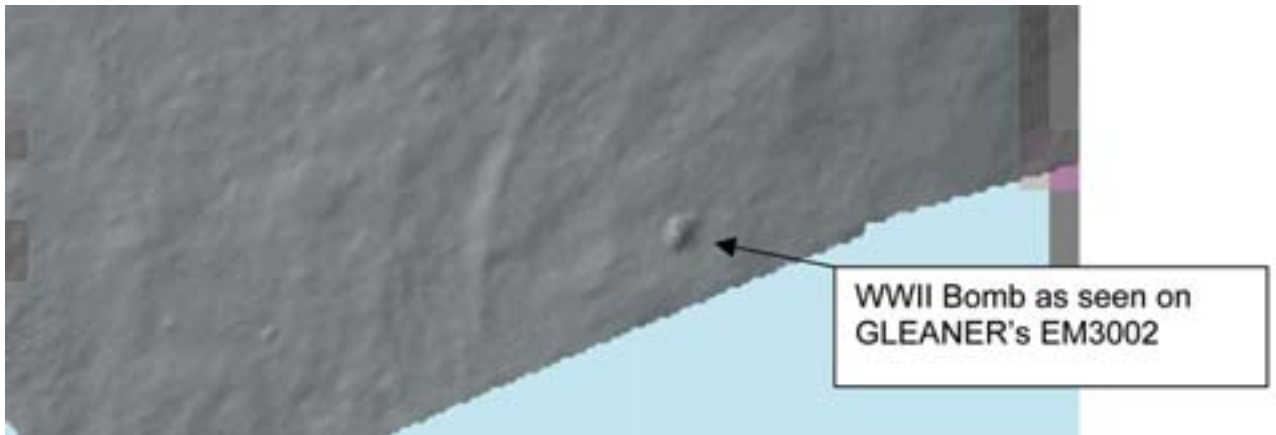
off Sierra Leone where she has also been conducting Rapid Environmental Assessment to better inform the task group commanders on many aspects of charting and oceanography. On completion of this exercise the other ships involved in VELA will be heading for home, but *Enterprise* will stay in the area for some four months conducting surveys along the West Coast of Africa before heading around the Cape of Good Hope towards Easter next year for a further three months work in the Arabian Gulf. From there she is likely to remain deployed in and around the Indian Ocean until returning in early 2008 for her five yearly docking. This potential two and half year deployment on the back of *ECHO's* year and half deployment last year continue to show how flexible and efficient the two SVHOs are.

HMS Roebuck, having returned from her Malta and Gibraltar survey periods in late March, remained in Devonport for a well earned Easter break before heading down to the Cape Verde Islands to take part in Exercise Steadfast Jaguar with the NATO Reaction Force, of which *Roebuck* is a part this year. Having completed several tactical surveys as well as some surveys of critical shipping routes which were left behind for the local community, she then headed off to conduct pre-cursor survey operations off Sierra Leone for the VELA Deployment and a diplomatic survey of Banjul in the Gambia. Unfortunately her Survey Motor Boat was out of action, so *Enterprise* will have to complete the shoaler aspects of this survey when she is in the area later this year. Unfortunately now part of a savings measure, *Roebuck* is confined to local water for the remainder of the financial year and will be helping to update charts to full multi-beam coverage in some of the more sheltered south coast exercise areas around Devonport. She will deploy towards the middle of next year, with a number of possible destinations currently being discussed.

HMS Gleaner has continued her surveys of various strategic ports around the UK. Finishing her Liverpool Survey in March, where she had sent details to the Mine Warfare Centre of several hundred possible mine like contacts, one of which turned out to be the Mine found and destroyed later in the year, she headed off to Faslane to conduct a three month survey of part of the Rhu Narrows. On her way there she was able to conduct a small survey in Crossapol Bay to bowl out a number of discrepancies between a recent Lidar Survey and overlapping Multibeam Survey. Moving to Rosyth in early September she is currently in a two-week maintenance period before heading off to Newcastle just prior to Christmas. Since the decommissioning of *Bulldog* and *Beagle*, *Gleaner* has been the old lady of the Survey Division having come into service in 1983. She was due to be replaced next year, but has been given a reprieve for at least another five years and should be going into a Ship Life Extension Period around Easter 2007 to ensure she remains running smoothly.

The HM Teams based at Devonport have continued to work hard, plying their trade onboard various Frigates and Destroyers during exercises, operations and other training periods. Unfortunately current shortages of officers have meant that only three out of five teams have been fully operational and their services have had to be strictly prioritised.

As the brief paragraphs above have shown, the Ship's of the Hydrographic Division continue to be among the hardest working vessels in the Royal Navy with our units having visited America in the West, Singapore in the East, The Gambia in the South and Scotland to the North all in the space of six months. As well as their traditional military survey work for the submarine, mine-warfare and general surface communities, they have also become ever more involved in Fleet and NATO operations and Exercises, with *Echo*, *Enterprise* and *Roebuck* all taking part in large multi-ship and multi-national exercises in the same period. On top of that, work areas off some of the poorer countries of the world have enabled us to carry out relatively small surveys of ports and harbours that will hopefully have a large effect on the local economies and populations. The future holds data gathering areas even further a field with the next six months seeing Ships as far south as South Africa and as far East and North as Japan and Vladivostok in Russia. All this bodes well for the Division as it continues to fight for its slice of an ever decreasing defence budget.



Obituary

Major John R Hyatt MBE (1913 - 2005)



John Hyatt was born on the 11th of November 1913 in Haslemere in Surrey. Following school he joined his father's estate agency in Hounslow, qualifying as an Associate, and later Fellow, of the Royal Institution of Chartered Surveyors. The outbreak of the Second World War led to John being commissioned into the Royal Engineers and joining Number 2 Survey Training Unit at Fort Widley on Portsdown Hill. He married Patricia in 1940 whilst a second lieutenant and in June 1942 John sailed from Glasgow bound for the Middle East.

The voyage was not uneventful as the ship suffered a collision en route but he arrived safely to serve in Palestine and Lebanon until he moved to Cairo in April 1943. John took part in Operation HUSKY, the invasion of Sicily, landing on the 15th of July, 5 days after the initial seaborne assault. In August 1943 John was one of several officers sent by Allied Forces HQ to Philippeville in North Africa to help map up the troop ships bound for Salerno and the launch of the Italian Campaign where he then found himself on the 13th of September. John spent the remainder of the war in Italy including commanding 19 Field Survey Company RE from 1944 until August 1945. He then assumed command of 650 Field Survey Production Company RE until 1946 when he left the service to return to his father's agency. After a few years in the family business John joined the Abbey National Building Society as a local surveyor, progressing through the company management levels to retire eventually as Chief Surveyor.

John Hyatt died in Bedhampton, Hampshire on the 13th of February 2005, predeceased by only 10 days by his wife Pat. He leaves a son and a daughter, Richard and Margaret.

SUEZ 1956 - I was (almost) there

By Ian Mumford

Sixty years ago having arrived in Burma fortunately just after hostilities had ceased, as described in *The Ranger*, Winter 2002 number 6, I got embroiled in the disintegration of the Indian Army and the troubled times leading up to Partition of the old Indian Empire. The Batteries of 1 Field Regiment RIA stationed in Moulmein were ethnically separated. Scindia's State Battery returned to Gwalior, unfortunately without me, and a few days before my somewhat lonely 21st Birthday I was posted to 2 Battery- destined to be reformed as part of a Regiment eventually going to Pakistan. In a new Mess, the rituals of settling-in revolved around speculation about the demob timetable as determined by the Age and Service Group numbers, washed down with plenty of Guzzlers Gin-fired tales of IWT*. In the words of the barrack room dirge:

When this bloody war is over, no more soldiering for me.

When I get my civvy clothes on, Oh how happy I shall be.

I had a suit of finest English cloth (there was no cloth rationing in India) made a bit later on by a bespoke tailor in Coimbatore. These performances were all repeated as I was shuttled north to Meiktila for a while before embarking at Rangoon on a little old coal-burning British India Steam Navigation boat packed with Indian troops, bound for Bombay. Most of the troops had never even seen the sea, having gone in overland, and as we turned north round Ceylon and were hit sideways by the fully developed monsoon, one of the worst tasks of being Duty Officer was to try and instil hope for a future life into the minds of terrified jawans lying in the shuddering scuppers pleading to be allowed to die!

In the next several months there were more new faces and Messes, at the School of Signals in Poona, the Indian Army Catering School at Aurungabad (with its perfect smaller copy of the Taj Mahal) and the Artillery Training Centre down south at Pollachi in Madras. The coming of Partition was marked by a 'personal' letter from Field Marshal Auchinleck and practice at waving a copy of 'A Spasm', the local equivalent of the Riot Act, at any mad mullahs who might be lurking, before I was able to realise the hope of most Brits--to see the Gate Way of India from the back end of a ship bound for Blighty. The ship was a captured pre-war German trans-Atlantic liner converted somewhat loosely to the 'East of Suez' rating trooping standards.

Ten years later in the glorious summer of 1956 I thought how happy indeed I was, and all was well with the world- a first house, a first car, and a first baby, with me in a challenging job in Military Survey as part of the growing professionalism which would soon turn Map Curators into Map Research Officers embarking on the organisation, understanding and exploitation of one of the largest modern map collections and related documentation in the world. But then again old Jeremiah started moaning about Peace, Peace, and along came Nasser to upset my happy existence. As I was running the Research Section (staff- two!) and had trooped through the Canal to and from Burma and India, I was inevitably the immediate expert charged with ensuring that we had the latest and best map information to support a possible operation in the area. As a result of our long-standing involvement and cooperation with the Survey of Egypt going back to the days of Sir Ernest Dowson, we had routinely received from them library copies, small stocks, and reproduction materials of many of their topographic map series. I was sent off to spend a couple of days in the War Office Map Store at Alperton, not far from the No.1 SPC and the smoking heaps of Willesden's rubbish dumps. The Superintendent, Mr Hall, made available to me his intimate knowledge of surviving copies of Survey of Egypt mapping, not all of which had been routinely distributed to the Map Library over the years.

As the crisis developed Bill Seymour was appointed Assistant Director Survey to the new 2nd British Corps Headquarters. Our boss, 'Bunny' Lewis, went to Paris with the MOD team and came back with a number of items including the updated detailed plan of the Canal from the as-yet unpublished Annual Report of the Suez Canal Company. It later transpired that the French military survey unit in Germany, the SGFFA, had, using the Magenta Screen Process, successfully reproduced in full splendour, a sheet of the new large format series of the Sinai area at 1:100,000 scale, for which we had no reproduction material. I was sent hotfoot up to Kodak's

*IWT = I was there!

main office in Kingsway to see if the essential materials and technical details were available here. I had been there earlier that year investigating the possibility of using colour photography as a practicable method of duplicating the extra copies required for library management purposes. At the end of the day I returned to Tolworth with some map examples of the Magenta Screen process done for me by their technical staff, and we subsequently reproduced a number of sheets at full size and in good colours for operational stock.

When the British forces moved out of Egypt to Cyprus, the Survey Directorate was established at Episkopi, and its Map Library was enlarged, with additional staff brought out from England. At the beginning of the emergency our Library Division Senior Map Curator, Miss Howard, had gone out to check the map library functions. By mid-August it was decided that I should go out to confirm that the Directorate there was giving as positive a response to HQ Middle East Land Forces' emerging demands for maps and related information as we were at home. My excitement was somewhat dampened by the thought of leaving a son of nine weeks and making my first flight into a potential war zone against a background knowledge of the planning for the uncertainties of the Cold War.

I was delivered in style to Stansted on 27 August in the Director's rather splendid staff car, a Standard Vanguard (my car was a far from luxurious 1938 Flying Standard Ten!), together with a hundredweight of latest 'catch' copies and repmat. Stansted still reflected its bleak wartime existence as a front line RAF station. How fitting it was that the MOD chartered plane from Sky Ways was a Hermes, a development from the wartime Halifax bomber. Flying at fairly low levels the flight was a sickeningly-bumpy affair with a refuelling stops at Marseille and Malta.

After the spectacular approach over the Bay of Morphou and the hills of Kyrenia we landed at Nicosia, where I was met by Colonel Gardiner's driver and taken to his office. After three hours of mutual briefing I was more than willing to accept an offer of lunch from his wife. Their official 'hiring' was a modern top-floor flat with spectacular views. I was warmly greeted by Mrs Gardiner, who, after apologising that as it was Thursday, it was hot curry lunch, was much relieved when I said not only had I served in the Indian Army, I had done the catering course before becoming Catering Officer at Pollachi. Needless to say, with their long family association with service in India the food was well up to standard!

The drive to Episkopi via Limassol, where I was dropped off at a hotel, was done in style, sitting with the Colonel on the back seat of an open Champ-the British advance on the Jeep. At that beginning of many years working for and with Richard Gardiner in Military Survey and the founding of the British Cartographic Society, I started to appreciate his sense of humour. I remarked on the frequent presence of nasty-looking lurcher dogs as we went through village after village. He said they were in fact the lasting memorial to Kitchener, who had whiled away his times on the island not so much surveying the map which was subsequently published by Stanfords labelled as the 'Kitchener Map', as hunting with the pack of Talbot hounds he had brought out from England. Those vigorous beasts had apparently impregnated all the native bitches, hence the lurchers everywhere! He also agreed that the convoys of scruffy French Foreign Legion troops that we passed were not up to our standards. As I said in his obituary in the Cartographic Journal, he was a difficult man to work for but a splendid man to work with.

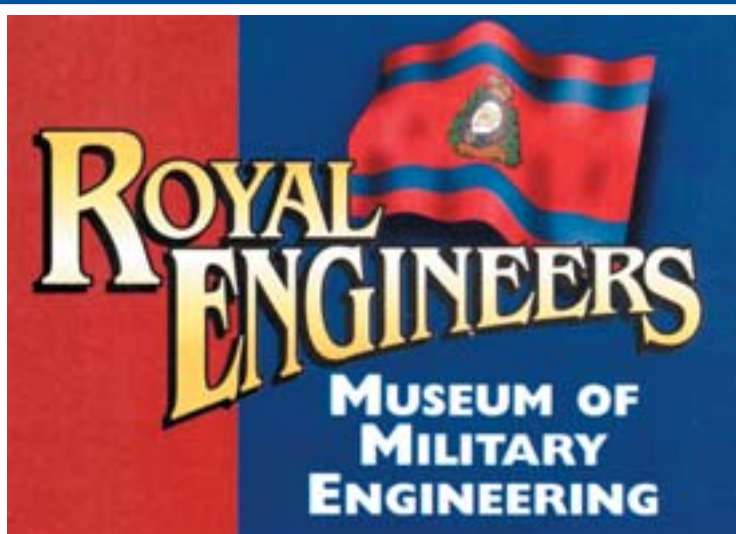
To say that Episkopi was a typically unfinished military cantonment is an understatement. The Map Library was housed in a couple of large 'Lahore' sheds joined together making a good substitute for an oven. With temperatures in the high nineties working hours were 8 to 4, and being lodged in Limassol, started most days with me standing in the military transport for the 12 mile trip to work. Our Map Curator was Anne Cavendish who, by the time she retired to stay on the island as a resident, had probably the longest service of anyone in the Middle East. She found me lodgings near her house in Limassol with a retired Greek opera singer who spoke no English but had fluent French. I have a haunting memory of being woken soon after dawn one day by the whoops of a fleet coming in to anchor in the Bay. Turning on my little pocket radio I heard Beirut Radio reporting that the French fleet was at that moment arriving off Limassol! About the same time the newspapers at home were headlining the arrival in Malta of the British troopships on their way to Operation Musketeer.

My ten days in Cyprus shook me, if not the world. As I had experienced in Burma and India, there were local 'troubles' with armed terrorists, and Major Thomas was involved on Internal Security (IS) patrols confronting them. At the Directorate Richard Gardiner's vigorous approach

to morning conference was fortunately offset by Hugh Thomas' more even-tempered instructions on what was to be done. I went out to 42 Survey Engineer Regiment at Zyyi and was confidently shown around by the CO Brian Irwin, who as DAD Survey 1 had been the military member of the War Office appointments board which had recruited me in 1952. Colonel Douglas Burnett, Deputy Director Survey came out a few days after me with another consignment of 'catch copies' and the latest briefings. The intense activity everywhere generated by the massive print programme was very heartening, but a subsequent visit to the Map Depot at Polymedia revealed challenging mounds of map stocks to be handled.

And Lo! It came to pass thirty years later, having retired as Principal Map Research Officer, I was re-employed as a Record Reviewer by MOD initially to sort out the records of the Suez campaign to be opened under the 30 Year rule. As the main concern of the Cabinet Office was to ensure that no evidence of Eden's possible madness came to light, I had no problem in clearing the highly classified records of Military Survey related to the campaign for inclusion in the new PRO Class WO 322 Suez Campaign. The frenetic activities during the few weeks of September and October before the invasion are reflected in the 500 or so 'Pieces' of maps and documentation of the programmes behind Operation 'Poker' and Operation 'Musketeer'. Military historians will find there the detailed SitReps and Progress Reports, and Operational Map Coverage Notes from mid-August onwards. The three million maps printed included half a million Air Charts, with over a third of the total having been printed by 42 Regiment in Cyprus. To show US awareness of what might happen I included copies of the 85 sheets of the Egypt 1:25,000 series which the US Army Map Service reprinted in October 1956. The Class does not include target materials nor the diversionary cover-plan mapping. The post-operational Reports of HQ 2(BR) Corps, including lessons learned are to be found in WO 288 pieces 77, 78, 79 (Feb. 1957).

The most telling comment I heard on the Suez farce came as I discussed the Campaign records with a Colonel in MOD who, as a young Subaltern in the Paras had been dropped into the Zone with the AA of Egypt Road Map of Egypt as his sole guide. On hearing of the quantity of maps we had printed, he suggested that 'we could have smothered the Gippos if we had dropped the lot on them'!



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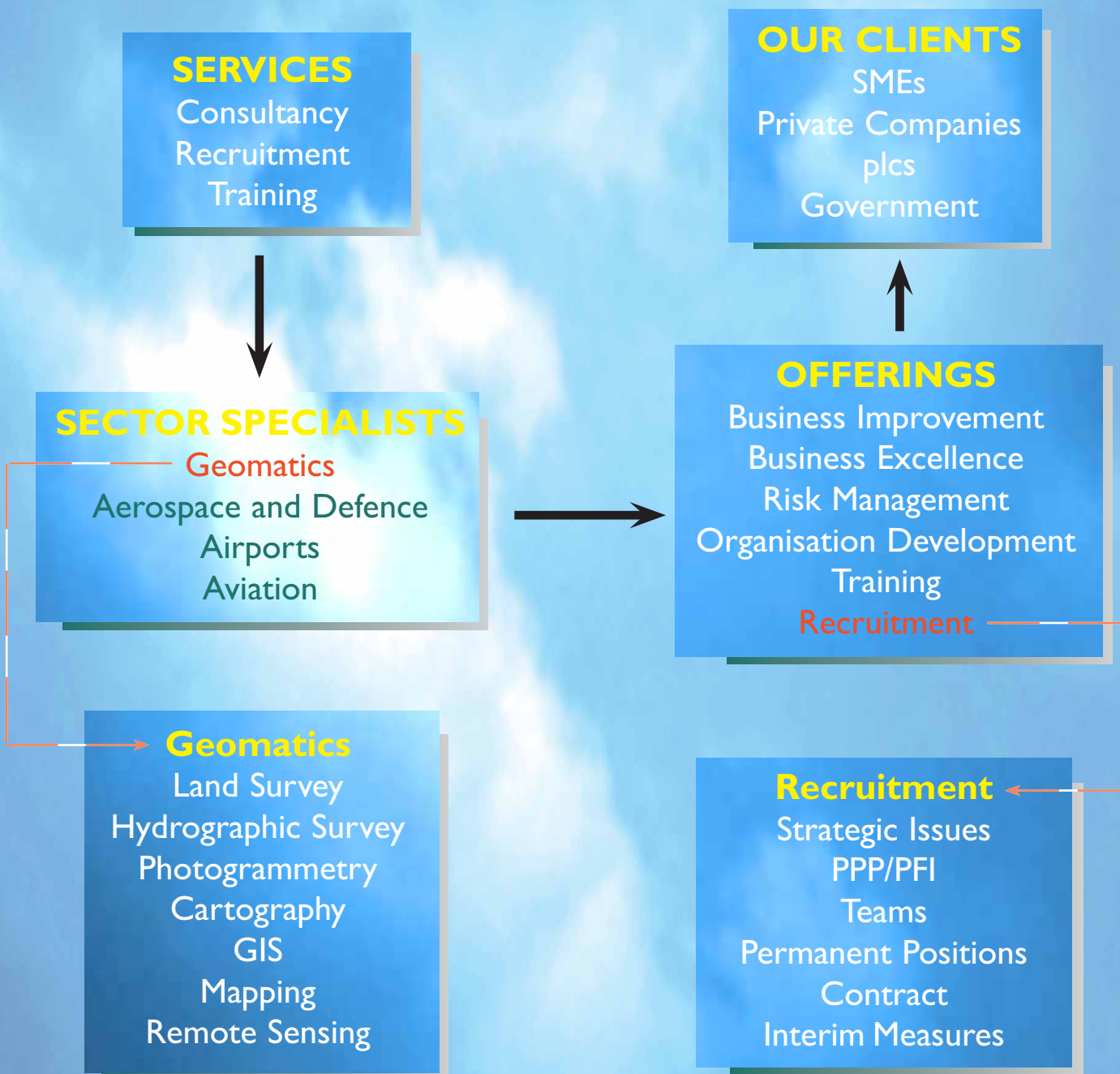
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