THE RANGER 2008

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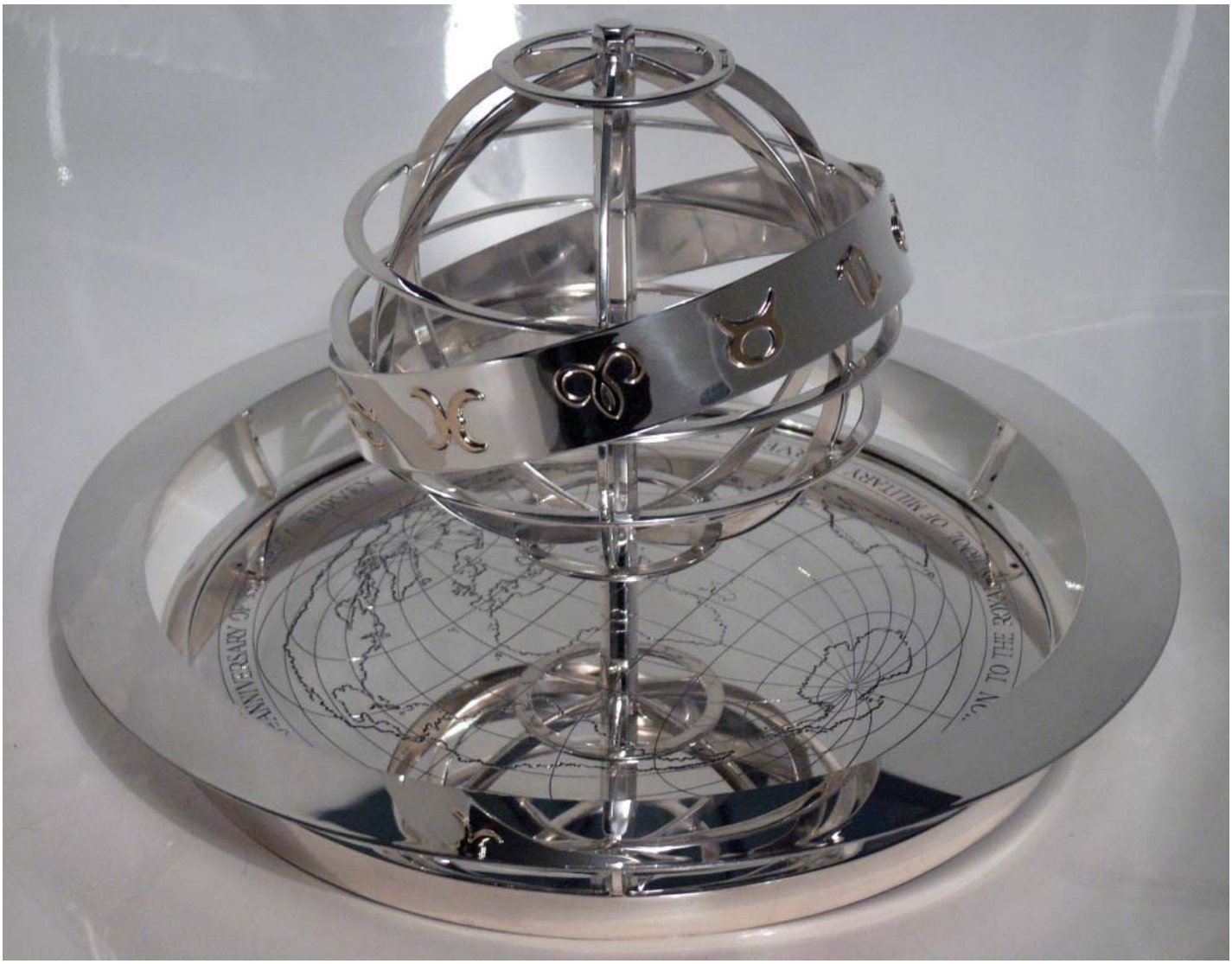

The Army Survey Course 60th Anniversary Silver Centrepiece. © David Morris

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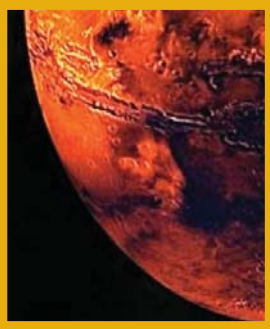

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In this edition of Ranger…

……we welcome ESRI as our new sponsor. As a leading GIS company and major supplier to the Defence industry it is most appropriate that the Association has developed a relationship with ESRI that spans both sides of the Atlantic.

Leading this issue are articles reporting events that commemorated the 60th anniversary of the Army Survey Course. Once again the DSA has commissioned jointly with the Corps of Royal Engineers a commemorative silver centrepiece that will for years to come grace the table at Mess dinner nights and bring to the attention of diners the longevity of high-level geospatial training for officers. The provider of that training, the Royal School of Military Survey, now plays on an even wider field as it is now part of the Defence College Of Intelligence. College Director, Captain Phil Burrell RN, in his article describes the college and explains where the School now sits within it and the broader remit that it now enjoys.

We are all aware that things are constantly changing in today's Armed Forces and an excellent article by Richard Blunt, the chief of staff at Hermitage, illustrates just how much and how fast these changes are happening.

The regular Geo People feature this time highlights those very special people who have reached the top of their professional tree and generally make units function smoothly and efficiently – the senior warrant officers of the Royal Navy HM speciality, Royal Engineers Geographic and the RAF's Aeronautical Information Documents Unit. Each of these officers brings over 20 years of experience and wisdom to the daily running of their organisation and provides valuable advice to their commanding officers. The Association wishes them well in their future careers whether as commissioned officers or civilians.

Ranger always includes items of an historical nature and in this issue we continue to document the story of sound ranging during the Second World War with Jim Whetton's in-depth look at the 4th Survey Regiment RA and its founding commanding officer. This article and several previously published in Ranger, together with Max Mangilli-Climpson's masterpiece *Larkhill's Wartime Locators* and Peter Chasseaud's *Artillery's Astrologers* provides Gunner Survey with an extremely well documented history, something that RE Survey still lacks but is being addressed at the moment by the DSA Council.

A second historical piece deals with a small aspect of Military Survey's role in the Cold War, a period that now seems remote and alien as local supermarkets stock Polish food, Russian oligarchs own English football teams and students from former Warsaw Pact countries attend the Army Survey Course. Enjoy a good read over the summer break.

Alan Gordon

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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.

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

AGM and Visit to Brooklands The Birthplace of British Motor Sport and Aviation

This year the Association's Annual General Meeting and Award Ceremony will be held at the famous Brooklands Motor Racing Circuit/Museum near Weybridge in Surrey on Saturday the 19th of July.

The AGM will take place in the Bluebird Room commencing at 12 noon to be followed by the presentation of the DSA Annual Awards, before taking a two course lunch. After lunch there will be a guided tour around the exhibits in the Museum of British Motor Racing to learn about the racing legends of a bygone era.

The Brooklands Museum is also home to 30 historic aircraft, including the Wellington bomber recovered from Loch Ness and a fully restored Concorde in which you can experience simulated take off and landing, and the fantastic Mercedes-Benz World with cars from their earliest models to those in the latest range.

It promises to be a very good day out, to attend please contact David Wallis at 161 Cooden Drive, Bexhill-on-Sea, East Sussex TN39 3AQ.

Eric Gilliam

Eric Gilliam was, in January 1940, a founder member of 512 Field Survey Company RE, the forebear unit of 42 Engineer Regiment (Geographic). He served as a helio worker with 512 in Hampshire as the unit formed up and then moved with them to Heliopolis in Egypt and later into Tura Caves. In 1943 he was posted to 517 Field Survey Company RE in the Western Desert (making him officially a 'Desert Rat') and then with 517 he went to Sicily and then Italy. He was invalided back to England in 1944 when he met his 4-year old son for the first time. He left the service after the war and he died on 15th March this year aged 95, leaving 91-year old Bill Roberts as the last surviving founder member of 512 Company.

Bereavements

It is with regret that the Association announces the deaths of Major General Chris Thompson, Freddie Hore and Ray Lower. Obituaries for Chris Thompson and Freddie Hore are in this issue of Ranger.

ESRI Inc and ESRI (UK) Support to the Defence Surveyors' Association

ESRI has extensive links with the Ministry of Defence, particularly with various parts of the Defence surveying community dealing with geospatial matters. In recognition of this ESRI Inc and ESRI (UK) have kindly agreed to sponsor the Defence Surveyors' Association, providing information and articles for inclusion on the Association's website and in Ranger Magazine. The Association very much welcomes ESRI's involvement in its affairs, as the Company has provided substantial support to the UK Armed Forces for many years.

The Future of Denison Barracks

Hermitage has been the spiritual and physical home of Military Survey/RE Geo since 1949 hence reports in the press and on websites regarding the future of Denison Barracks are of particular interest to readers.

The official line is that MOD is considering the move. In essence the intent is that 42 Regiment and HQ JAGO move to RAF Wyton and the RSMS to Chicksands as part of MOD's plans to improve delivery of GEOINT capability and training. Included in the overall proposal is a plan to move 14 Squadron to join the Regiment at Wyton. The final decision is some way off, planned for Autumn this year, and timings are likely to be in the order of late 2012 for the Regiment, perhaps 2011 for HQ JAGO with the RSMS move yet to be determined (but could also be the 2011/12 timeframe). It is stressed that nothing is confirmed and until the final decision is taken these dates are purely proposals. As for the barracks itself, MOD has yet to decide on its closure or whether it will house other Defence users.

The New DSA Website

The new DSA website (with the same address www.defencesurveyors.org.uk) is now up and running. To access the 'members only' area, members now need a username and password. John Knight has emailed on-line members with this information however, a number of the emails 'bounced' indicating that members have changed their email address but not informed the Membership Secretary of their new address. Anyone who is on-line but has not received details of their username and login should contact the Membership Secretary on membership@defencesurveyors.org.uk. Any member who does not have an email address but would like to access the site by other means e.g. via the public library or Internet café should call John during working hours on 01635 20 4243.

Editor's New Telephone Number

Please note that with immediate effect the Editor's contact telephone number is: 07765 577 754. Email contact remains via editor@defencesurveyors.org.uk.

Visit to Apsley House

David A Wallis, Social Organiser

On Saturday 1st March a party of 31 members and their ladies went to London to visit Apsley House, the home of the Dukes of Wellington, which is known as Number One London as it was the first house after passing through the western Toll Gate.

Before the afternoon visit the party partook of a traditional fish and chip lunch at the Shepherds Tavern located near-by in Shepherds Market. As always the conversation dominated the private dining room on the first floor as friends gathered together, some of which had not attended our gathering for a long period of time and took the opportunity of catching up with all the news.

It was very nice to see Professor Vidal Ashkenazi and his wife Esther, who travelled down from Nottingham also George Harper who made the lunch in the nick of time as he was held up by a derailment at Milton Keynes and had to catch a service bus to Hemel Hempstead to continue his journey. Another member we have not had the pleasure of seeing for such a long time was Sam Sowton, accompanied by his wife Veronica, both are looking great. It was also nice to see Robert and Jane Dobbie as Robert has had some health problems of late and is now back to looking like his old self. As always General Eric and Pam Barton were in attendance, they are great supporters of the DSA; I can only remember one event that they couldn't attend due to General Eric's health. He gets along very well with Pam's constant attention, it is amazing how time passes, Eric will be 80 in May.

After lunch we walked over to the Wellington Arch, sited in the middle of Hyde Park Corner, it has three exhibition floors, fortunately served by a lift, however the attraction was to ascend to the very top and look out toward the east over Buckingham Palace Gardens and Hyde Park and Knightsbridge to the west. We then walked over to Apsley House, accompanied by our very knowledgeable guide Robert. On arrival we split into two parties to receive a very detailed tour of the amazing art treasures that the house contains. Most of the items were given to or collected by the first Duke after the defeat of Napoleon at the Battle of Waterloo. The collection is administered by the Albert & Victoria Museum and the house comes under the umbrella of English Heritage.

There are so many wonderful things to see and describe that there would not be space left in the Ranger for any other stories. However, one that is worth telling is how the Duke of Wellington was nicknamed " The Iron Duke". In 1829 there was a great deal of unrest due to Wellington, who was then Prime Minster, forcing through Parliament the Catholic Emancipation Act which made him very unpopular with the masses. They vented their frustration and anger by gathering outside Apsley House and stoning the windows, The Duke then had workmen fit iron shutters to all the windows that faced the Hyde Park side of the house, hence the name.

An Interesting Website

Former members of Military Survey, or indeed anyone with an interest in surveying and military matters of bygone days, are recommended to visit the website of the REA Military Survey (Geographic) Branch at http://survey-branch-rea.co.uk. Many members have now provided photographs of their time in the service and almost all post-war Survey units are represented. Subjects range across the entire spectrum; fun in the mess in Fayid and Zyyi, field survey in Borneo, the interior of 84 Squadron's air survey office, group photos of surprisingly young men at Hermitage and so on. It is well worth a visit on a rainy day – the sun always seemed to shine in yesteryear!

The Worshipful Company of Scientific Instrument Makers Annual Awards Dinner

Tony Keeley

The Royal School of Military Survey was once again the recipient of the Livery Company's hospitality when they held their Awards Dinner at their hall in London. Though in the past the Awards Dinner has been the occasion for presentation of prizes to both the best Royal Engineer officer on the Army Survey Course and to the best soldier Geographic Technician from the previous year's Class 1 course, this year saw the presentation of only the Army Survey course prize because of the revised timing of the Class 1 course which now finishes in March, the 2007 soldier prize being presented in 2009.

The Army Survey Course prize for 2007 was awarded to Major Jon Kerr RE who completed 92 ASC last September. Jon was accompanied at the Awards Dinner on the 6th of February 2008 by the Principal of RSMS, Mr John Knight, and the Training Coordinator, Major (Retd) Tony Keeley. Jon is now on his Intermediate Command and Staff Course at Shrivenham hence he exchanged one highly academic course for another equally demanding course. After an extremely hospitable dinner which included the passing of the Loving Cup filled with spiced wine, the Master of the Worshipful Company of the Scientific Instrument Makers, Mr DW Smith, presented prizes to a number of recipients including several from the services and the academic world. As always the Livery Company was solicitous in its welcome and hospitality to guests and prize winners alike.

The ceremony of the Loving Cup

The Master, Mr DW Smith, presents the Army Survey Course Prize to Major Jon Kerr RE

BOOK REVIEWS

Readers knowing of newly published books or cds that might be of interest to Ranger's readership are asked to let the Editor have the details so that a review can be published in Ranger.

The Armillary Sphere and the Army Survey Course Silver Centrepiece

By John Knight, Principal, Royal School of Military Survey

Photograph courtesy of Geoff Sellars DSOP

The Army Survey Course is involved with exciting new technologies across the wide range of disciplines that today make up GEOINT. All that Geo provides is fundamentally related to astronomical and geographical coordinate systems.

Armillary spheres have been associated with astronomy and used for observing celestial bodies or for the transformation between different celestial co-ordinate systems since the days of Ptolemy and later those of Tycho Brahe. They were designed to permit direct reading of the position of a celestial body in a convenient co-ordinate system. This close tie with co-ordinate systems is a key aspect of our work today; geo-referencing spatial and imagery information and intelligence that is used in defence in an increasingly complex domain.

A feature of the Army Survey Course has been its international representation from the start, with a significant number of Commonwealth and overseas students coming to Hermitage to be trained.

The Armillary Sphere represents that solid framework on which everything is based; a representation of the sphere has dominated the entrance to the Royal School of Military Survey since the rebuild in 1980. The map of the World engraved on the disc represents the international nature of the ASC and its importance to many nations around the globe. The centrepiece brings together these two themes into a modern piece of silverware that will be a lasting memento to the ASC and the School's time at Hermitage.

The armillary sphere: gate guardian to HQ RSMS

The centrepiece has been designed and manufactured by a traditional gold and silversmith, Mr Julian AB Hart of Hart Gold & Silversmiths (www.hartsilversmiths.co.uk). The company specialises in a wide range of domestic silverware from the smallest piece of cutlery to bowls, jugs, condiment sets, tea and coffee services and the largest of salvers. There is also great knowledge in the designing and manufacture of Ecclesiastical and Civic silver.

The workshop is the last operating remnant of the Guild of Handicraft which CR Ashbee established in 1888. George Hart was a silversmith with the Guild when it moved to Chipping Campden in 1902. From 1912 he took on the running of the workshop, joined in 1930 by his son Henry. This high tradition is carried by his grandson David Hart along with Derek Elliott, and William and Julian Hart.

The silversmith's workshop. © David Morris

References:

Ptolemy, Almagest, especially Book V, Chapter I. Translated by G. Toomer, Ptolemy's Almagest, London 1984

S. Schechner Genuth, 'Armillary Sphere', in R. Bud & D. Warner (eds.), Instruments of Science: An Historical Encyclopaedia, New York & London

60th Anniversary Celebration of The Army Survey Course

By Tony Keeley

The idea of a reunion to celebrate 60 years of the Army Survey was born at DGI 2007. David Swann, a former ASC student and now a senior member of staff with ESRI, came up with the suggestion for a reunion to coincide with DGI 2008, which would encourage overseas attendance. This was quickly followed by a very generous offer of sponsorship from ESRI (www.esri.com) and ESRI (UK) (www.esriuk.com). With this financial backing it was apparent that the idea could become reality. Again to encourage attendance the decision was made to hold the main event in London and to incorporate a tour at Hermitage later in the week. A date was set for a dinner on 21st January during the 2008 conference, any conflicts on social functions having been resolved. The venue was easy, the Army and Navy Club (the Rag), then was the small matter of attempting to contact as many former students as possible. As stated in my last article, over a thousand students had attended the Army Survey Course from many different countries.

Meeting old friends at the reception in the Marlborough Room.

Attempting to track down theses students involved use of a range of different lists, DSA, REA and Royal Engineers List but inevitably much came down to cascading the information through known contacts. ESRI used their extensive source of contacts as did the Defence Geographic Centre for overseas national survey agencies. Inevitably some contacts proved less fruitful, some 150 former students from Nigeria contacted via one email address produced no responses while others particularly through the DOS produced a steady stream of links. By August 2007 most of the mail shot had been completed and the bids started to come in. The concern was that of numbers of applicants, 125 being the maximum for a formal dinner, the preferred format, however in the event nobody was turned away!

In parallel with this activity the DSA had been considering means by which some of its funds could be used for charitable purposes. Amongst possible proposals was that made by the Principal of RSMS, Mr John Knight, that a piece of silver should be commissioned to commemorate the 60 years of the Army Survey Course. In a remarkably short time John sketched out an idea based on the Armillary Sphere based outside the headquarters at Hermitage and long associated as the symbol of both the course and the Royal School of Military Survey. A silversmith, Hart Gold & Silversmiths of the Guild of Handicraft, had already been identified as having produced a silver replica of the sphere which was presented to the Warrant Officers and Sergeants Mess at Hermitage by two leaving members. John's outline design incorporated the sphere and a dish with a world map symbolising the international nature of the course. This was then transformed by the silversmith, Mr Julian Hart, into the centrepiece. However none of this would have been possible without the support of the DSA and the Corps. In a very short time scale the Regimental Colonel, Colonel David Caulfield, agreed to a very generous Corps contribution. The result is, I believe, one of the finest pieces of Corps silver produced of late. Mind you, it was tight as it was essential that the silver be hallmarked during the current – the anniversary - year!

The dinner in the Pall Mall Room.

Now back to the reunion itself, the easy bit. The format was a champagne reception enabling old friends to renew

DSA President, Major General Patrick Fagan presenting the centrepiece to John Knight, Principal of the Royal School of Military Survey.

acquaintances followed by a formal dinner, the menu chosen from the Rag's fine selection. Attendance from former students did not quite cover the whole range of courses but not far short. Sydney Clark, from DOS, who attended No 4 Long Survey Course from October 1949 to September 1950 was the most senior student and the most junior was Major Mike Wood from the United States on the current course, No 93 Army Survey Course. Former students included those from as far afield as the United States including Hawaii, Canada, Malaysia and Sweden. Guests included Stuart Haynes, the Director of the DGC, Susan Truesdale, the Academic Registrar and University Secretary from Cranfield University and the Regimental Colonel. The principal guest was General Sir John Stibbon, a former Chief Royal Engineer. ESRI and ESRI(UK) hosts included a number of former Army Survey Course students and the Managing Director of ESRI (UK), Dr Richard Waite.

John Knight presided at dinner and after grace by John Elder, Major General Patrick Fagan, the president of the DSA, presented the silver centrepiece to John Knight acknowledging the generous contribution from the Corps. After a very fine meal, the loyal toast and an introduction by John Knight, David Swann welcomed all on behalf of Jack Dangermond, the President of ESRI. General Sir John Stibbon, who gave keynote speech, has had a long association with the then Military Survey from his time as Master General of the Ordnance, during which period Petros was introduced. Also during his tenure as the Chief Royal Engineer the School received its Royal Accolade.

Some 40 former students then attended the visit at Hermitage on the 24th of January. The visitors were welcomed by the Commander of the Joint Aeronautical & Geospatial Organisation (JAGO), Colonel John Kedar. Following a number of briefings the group toured the School and 42 Engineer Regiment, the latter courtesy of the Commanding Officer Lieutenant Colonel Rupert Dash. Amongst those visiting were former chief instructors of the School and commanding officers of the Regiment. What was quite clear was that, though the focus had changed from production to support to operations, the quality of the geo soldier and the instruction were still of a very high standard. The visit was rounded off with a curry lunch in the Officers' Mess which I hope came up to Lieutenant Colonel Ben Burrows' exacting standards!

I would like to particularly thank John Knight for his many suggestions, support and ideas leading up to the reunion and particularly for his design flair in the production of the magnificent centrepiece and other displays. Others who have greatly assisted were Chris Dorman from ESRI, and Hannah Delaney, the new graphics officer in the Regiment who did such a splendid job in designing the anniversary brochure. I am also indebted to Dr Hugh Luxmoore-Peake who supplied me with the photograph of his course, No 8 Long Survey Course, the inspiration for the cover of the brochure. Finally I would like to thank ESRI, a world leader in the geographic information system (GIS) software industry, without whose sponsorship this event could not have been staged. From a personal point of view, organising this whole reunion has brought me into contact with many extremely charming individuals and has given me the privilege of a tremendous historical perspective over the last 60 years.

Robert Dobbie and Stephen Walker at the curry lunch.

Survey Training in 1869

By Mike Nolan

The article on the Army Survey Course by Tony Keeley in Ranger Vol 2 No 16 prompted another look at the 1983 *"History Of The School Of Military Survey"* by Lieutenant Colonel MJK Davies but neither in this nor in the earlier 1966 history, *"The History Of The School Of Military Survey And Its Predecessors"* by Major BL Davies was the period of the late 1860's covered in detail. It is thought that the following notes taken from *"The Royal Engineer"* by the Right Honourable Sir Francis B Head Bart published by John Murray in 1869 might thus be of at least a little interest in this 60th anniversary year of the present Army Survey Course.

Course of Instruction for Officers in General and Special Surveying, Reconnaissance, Astronomy, Defilade, Survey for Determining Lines of Communication by Roads, Railways, and Canals.

Lieutenant-Colonel Fisher, C.B., Royal Engineers. Instructor.
Lieutenant C. Halkett, Royal Engineers. Assistant-Instructor.

All Officers of Engineers are required to go through this course, for which six months, or 156 working days, are allowed.

For this object they are required to parade at the office at 8 A.M., to receive from the Instructor especial directions as to the work of each for that day, and the amount of progress, daily recorded, is reported each month to the Director of the Establishment, with remarks whether for each study the progress of each Officer has been on the whole above or below the time allotted for it, also whether it has been, or not, satisfactory.

As the young officers advance in the different branches of military science, in which they are here instructed, in order to test their progress, they are required to compose plans and designs, with a report in writing thereon of various descriptions – for instance, one of a fort, with an estimate of the amount of deblai and remplai, with the probable cost of the earth-works, a scrutinising test of the knowledge acquired, of the delineation of ground upon a contoured plan, in fact, it is the practical application by the Engineer, of a most complicated work to a given site.

These plans and projects had, I observed, been carefully examined by the Chief Instructor, who had recorded upon them, in red ink, for a purpose hereafter to be described, remarks, several of which I copied into my note-book, as evidence of very efficient supervision.

The details, however, of this course of instruction are so numerous and abstruse, that, as I cannot altogether pass them over, or, on the other hand, attempt to enumerate them all, I will record a portion of them, which may be especially interesting to the reader, as having formed part of the course of instruction which Sir Robert Napier, as a young East India Engineer officer, practically received during his progress through the Royal Engineer Establishment at Chatham.

In reconnaissance the young officers (who at the Royal Military Academy had been well grounded in the preliminary principles of sketching) are here required to make a reconnaissance or military sketch on a scale of six inches to a mile, founded upon a base and system of triangulation, showing the position of towns, villages, churches, detached houses of importance, roads, streams, fords, bridges, &c., accompanied by a report in writing describing among other details "whether the surrounding country is closely intersected with fences, and favourable or the contrary to the movement of the troops of an army. Whether with respect to any road included in their sketches there is any point where communication by it could be easily destroyed, either permanently, or by hasty demolition.

What number of troops or horses could be sheltered at a given position on an emergency, or for continuance, and the number and description of carriages and carts that could be provided.

Whether the country is well adapted for defence, especially noting any position that is capable of being rendered defensible speedily – whether each town or village in the sketch is close, open, surrounded by walled gardens, or other buildings which could readily be made defensible.

Lieutenant Colonel AAC Fisher, Chief Instructor Survey 1864 -1869

Whether there is any ground suitable for an encampment, either for a permanence, or for troops on the march, or any spot particularly adapted for a defensive position.

Which of the roads designated on the plan are capable of bearing continuous heavy traffic, and what means are at hand for their repair. Whether the information reported has been obtained from the officer's personal observation, or derived only from a report.

Lastly, all proper names are required to be in italics, in characters sufficiently large to be easily legible to a man on a horseback.

The following is a portion only of the synopsis of the amount of instruction Colonel Fisher is selected to impart.

THE SURVEY COURSE

The course of surveying for the officers of the Royal Engineers is intended to qualify them for carrying on survey operations of every description, and for designing and laying out engineering works, so far as these are influenced by the features of the ground on which they are placed, or over which they are carried.

The course consists of two parts: the one, relating to surveying processes exclusively; the other, to the uses made of the plans and maps prepared by such processes, for engineering purposes.

Under the first of these divisions the officers are practically instructed in Astronomical, General, Special and Reconnoitring Surveying, including the accurate delineation of the inequalities of the ground by Levelling and by Contours traced instrumentally, and also the giving relief's to hill forms by sketching with the pen and drawing by the brush.

Under the second division they are exercised in the adaptation of works of fortification to contoured sites; and in the selection and survey of lines of communication by roads, railways and canals, and in drawing up projects for their execution.

Astronomical Surveying.

The officers are taught the construction and use of astronomical instruments, and are practised in making observations with them.

They study from published works and memoranda printed at the establishment the most useful problems for finding the Time, the Latitude and Longitude, the Direction of the Meridian, and the Variation of the Compass.

Examples of each problem are worked out by them from their own observations, or from observations made in their presence.

The use of meteorological instruments, and the reduction of the observations made with them, are also practised.

General Survey.

As a preliminary exercise in drawing, each officer constructs a plate of scales from data supplied to him.

For particular information on the delicate and powerful instruments and apparatus which have been used in great national surveys, and which cannot be studied in the establishment observatory, the officers are referred to published works; and they are instructed in the adjustments, the unavoidable errors of construction, and the powers of the instruments put in their hands, for the execution of their Survey Course.

The general survey comprises : -

1st. The selection and measurement of a base. – The base is measured with an ordinary chain and a 5-inch theodolite, and, this measurement having been reduced to its horizontal value at the level of the sea, the section of the base is laid down on paper.

2nd. Triangulation. – The measured base is extended by a triangulation over 10 or 15 square miles of country, and the relative altitudes of, and the distances between, the stations selected are determined from observations. The computed horizontal distances are laid down, and the azimuth of one of them is determined

3rd. Traversing. – The positions of the roads, streams, boundaries of woods, and other marked features, surrounding and intersecting an area of six or eight square miles of the country triangulated. Are then determined by running traverses with a theodolite from one station to another, so as to cut up this area into spaces, which will admit of being filled in by a less accurate method, without introducing an error in the plan.

4th. Plotting of detail and completion of the work. – The protracted lines are now transferred to another sheet of paper, and the detail, obtained as the traverses proceeded, is plotted from the field-book. From this plot sketch-sheets are prepared, and the remainder of the work is sketched in with the aid of a prismatic compass, the form of the ground being represented by pencil strokes assisted by contours put in with the aid of a portable level. The sketch-sheets are etched in with a pen, and a finished brush-work plan of the complete survey, embracing all the information collected, is prepared from them, with the original plotted detail as a basis.

Special Survey.

A piece of ground, about half a square mile in area, is surveyed with minute accuracy as for some special purpose, and is laid down on a scale sufficiently large to admit of the calculation of the areas of the enclosures from the paper. The method followed is the same as that pursued on the Ordnance Survey, and with the Tithe Commutation Surveys, &c.

Contouring. – On the ground thus specially surveyed, contours are traced instrumentally at given vertical distances apart, and are plotted on the plan.

Military Reconnaissance.

This is conducted on principles similar to those which govern the operations of the General Survey; the instruments employed, however, are all portable. The measurement of a base is made by such means as readily offer themselves (generally by pacing), and the trigonometrical points are fixed simply by protracting angles observed with a box sextant, or compass. The whole of the remaining features and details considered necessary in a military point of view are sketched in with the aid of bearings and pacing. The reconnaissance embraces about six square miles.

In addition to the topographical sketch of the ground, each officer ends in a detailed report of its general character, its resources, and military capabilities, and illustrates it with a landscape panoramic view of its most important features, drawn in pen outline.

Fortification Branch.

Every officer is required, in this branch of the survey course, to design one or more works of defence for the occupation of a site, of which a contoured plan is furnished to him.

In performing this exercise the officer becomes expert in reading the various forms and slopes of ground, as expressed by contours; he meets with, and learns to provide for, some of the many modifications of the conditions of defence which the occupation of irregular sites necessitates; and he acquires facility in the application of descriptive geometry to the determination of the planes of defilade and the several planes of a work.

The data upon which the design is framed consist of a plan of the ground shown by contours, and of some of the conditions to be filled by the proposed fortification; such as the objects for which the site is occupied, the strength of the garrison, the extent of the works, the nature of the defence of the ditches, the trace, or the profile to be adopted, &c.

On the completion of his design, the officer writes a report explanatory of the character of the works he has adopted, and describing his arrangements both for the distant and near defence, with any improvements which have suggested themselves in working it out; and since the scale of the design admits of considerable accuracy in its preparation, he is required to enter very fully into the details of the arrangements he proposes.

The report is accompanied by tables showing how the remblai and deblai are equalized, and that the distribution of the latter is economical.

Civil Applications.

Projects for a line of communication, general plan, and trial sections. – The officers are instructed in the general principles which should guide them in laying out lines of communication, whether by road, or canal, and are then sent out to examine the country between two points, from six to ten miles apart, and are required to decide on two or more routes which apparently offer the greatest facilities in point of gradients, soil, and the materials, of construction. Availing themselves of the best map or plan they can obtain, they draw a plan showing, approximately, the divisions of the properties through which the trial lines are run; they then make trial sections; and from these sections and their previous examination of the ground, they determine on the line to be adopted – embodying in a report a general description of the country, the obstacles encountered on each route, the gradients, curves, &c., and also the calculations which led to their decision. In their calculations they estimate the cost of the necessary constructions on each of the trial lines, the cost of conveyance for heavy goods on an assumed basis of daily traffic, and the time occupied in each case for quick transit.

Working plan and section. – A length of one mile of the route determined on as the best is selected, and for this a special survey is made which is laid down as a working plan – the line being picketed out, when no objection is raised by the owners of the property through which it passes. A working section f the line is also prepared from accurate levels.

Plan of details, &c. – For the works proposed on that portion of the line which is included within the limits of the working section, a plan of details is prepared, as well as a specification for the works and an estimate of their probable cost.

The Survey School for the Non-Comissioned Officers and Men.

The survey school for the non-commissioned of the Royal Engineers has been established in order to train sappers for employment on the Ordnance Survey of Great Britain; and to produce a number of men instructed in survey duties, who, being posted to companies of Royal Engineers, may frequently find opportunities during their service, especially in our colonies, of usefully applying their knowledge.

Admission to the school is obtained solely by volunteering. From time to time circulars are sent to all the home stations where Royal Engineers are employed, inviting both non-commissioned officers and men to volunteer for admission to this or any other of the “special schools” established at Chatham, and accordingly none but volunteers are admitted, and of volunteers, those only who by their qualifications are considered likely to become useful as surveyors.

The period during which they are under instruction varies from four to nine months, according to the extent to which it appears desirable to instruct each man, or, in other words, according to his capabilities for learning the whole work or only a portion thereof.

Each man on leaving the school is given a certificate on which is stated his qualifications, in order that the officers under whom in any part of the world he may subsequently serve, may on its production at once read his value.

The Defence College of Intelligence

By Captain Phil Burrell RN, Director, Defence College of Intelligence

The Royal School of Military Survey has been an integral element of the Defence College of Intelligence (DCI) since 1 April 2006. Having recently undergone a major re-organisation, the DCI, as the training delivery arm of the Defence Intelligence and Security Centre (DISC), continues to position itself against the requirement to deliver intelligence, and in particular ISTAR, training in a changing environment whilst ensuring that it meets operational requirement and mirrors operational practices.

The DISC Headquarters at Chicksands is set in 660 acres in the heart of the glorious Bedfordshire countryside. Readers will be challenged to identify a more striking or historically connected Defence site, the centrepiece of which is its remarkable 12th Century Priory, granted to the Gilbertine Order and unusual in housing both nuns and canons. Purchased by the Air Ministry in 1936 from the Osborne family, who had owned the estate for the preceding 400 years, Chicksands was developed as a code intercept station supporting the signal intelligence programme carried out at Bletchley Park. Following WWII, Chicksands was operated by the US Air Force as a Signals Intelligence site until September 1995 when the site was returned to the MOD.

The DCI provides an extensive range of intelligence related training through its four geographically separated training delivery organisations: the Defence School of Intelligence (DSI) located at Chicksands; the Defence School of Languages (DSL) at Beaconsfield; the Defence School of Photography (DSOP) at Cosford and the Royal School of Military Survey (RSMS) at Hermitage. With a staff of some 470, the DCI provided training for almost 5000 personnel over the past training year.

At the core of the DCI is the Training Policy and Management Department (TPMD) with responsibility for ensuring implementation of both Defence and Single Service training policies across the organisation. The DCI contains also a Student Management Department (SMD), which is responsible for student administration, management and support for all trainees.

The Priory in winter

Students in the newly created ISTAR Training Department

Having undergone a recent fundamental reorganisation, the DSI consists now of six Training Departments and is responsible for the delivery of Defence Intelligence and Security training, including specialist trade training for the Royal Navy Communications Technicians, Royal Marines, Royal Signals, Intelligence Corps and RAF Intelligence branch personnel.

The newly created ISTAR Training Department consists of 3 branches. The Tactical Intelligence (Counter Insurgency) Branch provides intelligence training designed to prepare Battlegroup, Battalion, Brigade and Division Intelligence Cells for operational duties in Afghanistan and Iraq while the Tactical Intelligence (Conventional) Branch delivers J2/G2 training to non-Intelligence specialist personnel. The Branch provides also support to the annual 2 week International Intelligence Director's Course, which draws together senior officers from 26 nations for a series of intelligence related seminars and discussions. The Analysis Training Branch is responsible for training Defence Intelligence Service Analysts in a range of analytical techniques and delivers IT training in support of analysts' work. From January 2008, the ISTAR Training Department will deliver the new ISTAR Manager's Course and has recently assumed responsibility for delivery of Operational Intelligence Support Group training to deploying personnel.

The Air Intelligence Training Department provides initial specialist training for RAF Intelligence Officers and for RAF intelligence trades. A number of RN officers have attended this training as an element of professional development prior to employment within the naval intelligence environment. Maintaining its wartime roots, the Signals Intelligence (SIGINT) Training Department within the Chicksands site provides signal collection, analysis, reporting, exploitation and applied language training to the tri-service SIGINT community.

Recognising the importance of physical and documentary security as a fundamental element of the counter-intelligence trade, Unit Security Officer's courses for the RN and Army and the IT security investigator and advisor courses are delivered by the Security Training Department. Noting that a significant proportion of intelligence continues to be gathered through human sources, the Human Intelligence Training Department delivers a range of courses covering: security and intelligence training for attachés and their staffs; overt and covert agent handling techniques; debriefing; tactical questioning; interrogation and surveillance techniques.

Finally, with Chicksands being the home of the Intelligence Corps, the Templer Training Department provides military and professional training for the Intelligence Corps' soldiers and officers, with the fundamental aim of engendering and nurturing Intelligence Corps' spirit and ethos.

The Defence School of Languages (DSL), delivers generic language training either in-house or on an outsourced basis. The DSL consists of a Training Support Wing and 5 Training Delivery Wings at Beaconsfield and Chicksands. Throughout the last training year, DSL has trained over 400 personnel with many receiving instruction in a range of operationally related languages.

The Defence School of Photography (DSOP) delivers professional trade training for members of the RAF, Army and RN photographic branches and supports operations and media requirements through combat photographic, accident and investigative training for all three services. Almost 85% of the training is in direct support to intelligence, security or media operations. Indeed, combat photographers trained at DSOP often provide the media clips from Iraq or Afghanistan that are shown on the national TV news. All photographic training is digitally based and ranges from short-targeted courses, designed to capture basic stills and video images, through to fully professional training.

Air Intelligence Training Department provides initial specialist training for RAF Intelligence Officers and for RAF intelligence trades

With a history on the Hermitage site dating back to 1949 and having been granted its Royal status in 1996, the RSMS provides Geospatial training to MSc level for Royal Engineer Officers and International Students through the Army Survey Course and to a Foundation Degree level for soldiers of the Royal Engineer Geo-Technician trade. In order to exploit the growing synergies between imagery intelligence and geo-spatial intelligence, the RSMS has recently assumed control of the Imagery Intelligence (IMINT) Training Department that is located on the Chicksands site with its principal output being the Imagery Analysts.

Visitors, both national and international, to the Defence College of Intelligence are frequent and the organisation enjoys links with local Sea Cadet and school CCF units. While training necessarily dominates activity, both staff and trainees make good use of the wide range of sporting and other activities that are on offer through the extensive facilities on all four sites and have achieved success in a variety of unit level single and inter-service competitions.

In conclusion, it is fair to say that the HQ DISC and DCI staff are making an active and valued contribution to a busy and thriving organisation delivering an operationally focused contribution to a process that views intelligence training outside of its platform or environmental stovepipes.

Virtual Map Library

The Department of Geography at the University of Portsmouth is creating a virtual map library on the web from scans of out of copyright maps. The map library will concentrate on 19th and 20th century mapping to complement the collections of earlier maps available elsewhere. The idea is that the collection should be both representative of the major types of maps produced in the 19th and 20th centuries, and have maps of particular interest, such as ones tied to particular events. There will be sections devoted to different kinds of mapping, one of which will be for military maps, another will be for topographic maps, and a third section will contain maps derived from boundary surveys. Other sections will cover smaller scale maps and different types of thematic maps. It is intended that each map should be accompanied by an explanatory text, describing the map, how and why it was produced, and giving details of any particular significance.

Initially, we will use maps we have to hand, but we are also looking for others to provide us with maps which can be scanned and added to the collection. We have an A0 scanner, and will scan any maps supplied at 400dpi. Once scanned, the maps would be returned to their owners who, we hope, would also provide the accompanying text. The maps on the site will be available for downloading without charge to any user of the site. Through the easier availability of high quality scans, we hope that the site will encourage a wider interest in non-antiquarian maps. As we do not aim to provide comprehensive coverage of particular map series, we do not aim to compete with commercial providers of scanned maps, such as the CDs of trench maps.

Anyone with maps which they would like to have included in the virtual library should contact Peter Collier either by e-mail peter.collier@port.ac.uk, or by writing to him at the Department of Geography, University of Portsmouth, Portsmouth PO1 3HE.

MapAction

By Robert Dobbie

It was a great privilege to be invited to the **Map***Action* Reception and Presentation at the RICS in October in the presence of Prince Harry, their Royal Patron.

Map*Action* is a charity which has teams of specialist trained volunteers who are ready to fly out to a disaster area within hours. There they deliver vital information, in the form of situation maps updated hour-by-hour in the field, that enable aid agencies to do their job of delivering assistance where it can save lives and relieve suffering. Thanks to their sponsors and supporters, including the Vodaphone Group Foundation and many individuals and companies in the geomatics business, as well as the Department for International Development, the EU and UN Office for the Co-ordination of Humanitarian Affairs, their services can be offered free at the point of delivery. Their maps are also freely available at their website **www.mapaction.org**.

Prince Harry meeting MapAction volunteers.

This was an occasion for them to report on 50 successful missions providing situation maps for international agencies and Non-Governmental Organisations (NGOs) for humanitarian support around the world since 2003. Operations included devastating floods in many areas such as Surinam, Kenya and Bangladesh, the hurricane in Jamaica, earthquakes in Kashmir and Indonesia, the tsunami and a volcanic eruption in Java etc. **Map***Action* also makes capacity-building visits and deploys training teams to disaster management agencies around the world so that their service can be understood and used effectively. They also set up tough training overseas for their volunteers and have an ambitious plan for future developments.

Map*Action* relies on employers who are able to release young staff at very short notice to go on missions for five to ten days. A **Map***Action* deployment is a great experience for the individuals involved as they complete important work and learn self reliance in tough situations. One member of a team told us of being 'bumped' off his helicopter ride back to base by casualties that needed urgent medical evacuation. He found himself left in the disaster area overnight reliant on his own resources to get food and shelter with the local people and improvise a mosquito net for himself.

In these days, many nations deploy expert aid teams to help in chaotic disaster situations and having to work in many languages can make a tough situation even harder, but a good up-to-date briefing map can be a really clear, factual multilingual document and speeds up delivery of life-saving aid to the right place.

MapAction field base in Jamaica.

Anyone interested in supporting **Map***Action* should visit their excellent website, **www.mapaction.org**, for an overview of their vital work and see what they might be able to do in terms of providing hardware, software or top-class volunteers who might even find themselves working alongside Prince Harry in a disaster emergency!

WO Mark Chapman RAF

Warrant Officer I/C Production and Despatch

Mark Chapman was born in Oxford in 1962 and educated at Woodhouse Grove Boarding School, Bradford, before completing an HND in Advertising Illustration and the History of Art at Newcastle Polytechnic.

Realising very quickly that with the advent of computers the Art industry's days were numbered, he joined the Royal Air Force as an Air Cartographer in April 1985. On completion of basic training at RAF Swinderby, he was posted to No 1 Aeronautical Information Documents Unit (No 1 AIDU) to complete his six months basic cartographers course. From there he went on to employment in the Phototypesetting Department which, by modern day standards, may seem antiquated but at the time was a huge breakthrough in technology.

Having now had a taste of computer technology, for which he showed a natural flair, Mark then moved across to the Auto Carto Section, Eastcote Branch, which was to join its mother site at RAF Northolt in 1987. This saw the dawn of what was to be a new technology in the production of aeronautical charts. 1989 saw Mark depart for the COC Cell at RAF Bruggen to assist in the mission planning department, working closely with fast jet crews in what were to be some of his most enjoyable and memorable experiences, albeit globally fragile times, in his career.

In 1990 Mark returned to No 1 AIDU on promotion, working again in the Auto Carto Section to assist in the introduction of a new generation of bespoke in-house programs namely LITES II produced by Laserscan. These programs were to revolutionise the unit's working practices over the coming two years in the production of digital Terminal Approach Procedure charts. From 1992 Mark worked in various fields of the En-route Department in the compilation, production and redrawing of En-route charts, moving on promotion again to the critical task of charts editor.

By 2000 he was involved heavily in the processing and tailoring of digital and cockpit display data for the fast jet fraternity as part of the Digital Geographic Processing and Preparation Systems department, more fondly known as DIGPAPS. In 2002, promoted to Flight Sergeant, he returned to the Large Charts Department where he was responsible for the production of both the En-route charts and the Low Flying Charts. Two years later saw a dramatic change in job role when he took over the challenging responsibility of the Prepress Section, the notorious 'bottle neck' of the Unit, ensuring the smooth transition of digital data through both lithographic and digital processes.

In 2006 he took over control of the Production and Despatch Department responsible now for the printing and collating of the many Flight Information Publications. Early 2007 Mark took up his current appointment as the Warrant Officer Production and Despatch Flight.

Mark and Julie married in 1998 and have 2 children; much of his spare time is taken up with governor duties for a local school as well as Parade Marshall for the local British Legion. When the wind is blowing in the right direction and the water is warm enough he can often be found taking time out with his love of windsurfing on Datchett Reservoir.

WO1 (RSM) R D S MEAKINS MInstRE

Regimental Sergeant Major, 42 Engineer Regiment (Geographic)

Rob Meakins was born in Newbury in 1968. After schooling in Abingdon, he joined the Army in April 1988 as a combat engineer. However, during training he was persuaded to become a military surveyor and arrived at the School of Military Survey in August of the same year. He completed a Cartography Class 3 course gaining top student and was then posted to 13 Map Production Squadron where over the next couple of years he was able to participate in exercises throughout the United Kingdom and also Denmark, France, Germany and Norway.

During 1990 Rob attended a Junior Non-Commissioned Officer Cadre at 33 Engineer Regiment (Explosive Ordnance Disposal) before deploying to the Gulf on Operation GRANBY. He was part of the Terrain Analysis team responsible for reconnoitring Iraqi defensive positions and supporting the US Special Forces. During this time he was promoted to lance corporal. Upon return from the Gulf he was posted to 14 Independent Topographic Squadron RE in Ratingen, Germany. He looks back with fond memories on his time with the Squadron, as he was able to qualify as a Physical Training Instructor and a Restraint and Arrest Instructor. Consequently, the Squadron endured 2 years of pain courtesy of Rob!

After returning to the UK in 1993, Rob was selected for promotion to corporal and completed courses including Terrain Analyst Class 2, Physical Training Instructor Class 2, Unit Expedition Leader, Map Reading Instructor and Long Range Reconnaissance Patrol Combat Survival Instructor. When not gallivanting around attending courses, he was a Section Commander for the 22 Engineer Regiment Junior Non-Commissioned Officer Cadre and he deployed to the US on Exercise PURPLE STAR in support of 3 Commando Brigade. Furthermore, he deployed to Tuzla, Bosnia on Operation RESOLUTE as a Geographic Detachment Commander where the team supported the US-led Multi-National Division (North). During this operation, Rob received a General Officer Commanding Commendation.

After completing his Class 1 course in 1998, he was posted as the Geographic Sergeant in HQ 24 Airmobile Brigade. A very busy, demanding and challenging post which became busier once the brigade amalgamated with 5 Airborne Brigade to form 16 Air Assault Brigade.

In 2000 Rob was posted as a Troop Staff Sergeant to 14 Geographic Squadron which was now based in Mönchengladbach. After a successful deployment of his troop to Oman on Exercise SAIF SAREEA II he became the Operations / Training Staff Sergeant responsible for the coordination and some delivery of military training.

In 2002 he was selected for promotion to warrant officer class 2 and posted to Northern Ireland. Initially posted to the Reconnaissance, Intelligence and Geographic Centre as a Troop Warrant Officer, Rob's post was moved to Headquarters Northern Ireland where he became the Province Geographic Warrant Officer. He provided advice, and attempted to, coordinate the geographic effort between the 3 brigades and Headquarters Northern Ireland whilst also becoming involved in the odd project or two!

In 2004 he was selected for a Squadron Sergeant Major appointment and was posted to 55 Training Squadron at Minley. He was the first geographic technician in recent times (maybe ever) to be posted in to a combat engineer training squadron as a Sergeant Major, but quickly realised that he was going to thoroughly enjoy his tour. After a fantastic 2-year tour Rob was selected for promotion to warrant officer class 1 and as a Regimental Sergeant Major. In 2006 he was posted as Regimental Sergeant Major, 42 Engineer Regiment (Geographic) and is due to leave during 2008 upon commissioning.

WO1(SR) Paul Roberts
Senior Warrant Officer Surveyor

Paul was born in Shifnal, Shropshire in 1960. He joined the Royal Navy in 1977 as a Survey Recorder with his basic training being conducted at HMS Raleigh and then his professional training at the Hydrographic School in HMS Drake.

As a Survey Recorder he served on a variety of HM Surveying Ships including *Hecla*, *Fox*, NP 1016, *Hecate* and *Endurance* surveying in UK Waters, the Mediterranean, Persian Gulf, Africa, Arctic Circle, Antarctica and the Falkland Islands. These sea appointments were interspersed with jobs ashore at the Hydrographic School, HMS Drake, HMS Tamar, Hong Kong, Port Surveyor at Devonport and on the staff of Commander Minor War Vessels in Rosyth. The best part of his sea going career was his draft to *HMS Endurance* as a Chief, where he was able to utilise all his training and conduct work in some of the remotest places in the south Atlantic.

In 1999 he was promoted Warrant Officer and joined Flag Officer Sea Training as the Programming Officer and then moved to become a Sea-rider, which entailed ensuring that the Hydrographic Units are capable of integrating with other units in a Task Group scenario.

His current job entails ensuring that the HM junior rates careers are managed by moving them between HM Vessels, thus ensuring that they get the experience required to become the Chiefs and Warrant Officers of the future and also ensuring that the HM vessels are manned in order for them to keep up the current high tempo operations that are now required. He was also involved with the amalgamation of the Survey and Meteorological branches and the amendments that are still ongoing.

Paul is married to Julie and lives in Plymouth; he is a keen golfer and enjoys walking especially the Coast Path and Dartmoor as well as looking after the garden and doing DIY. He is currently doing an electrical installation course in order to attempt to be an electrician as a second career.

Mapping with a Mission: Series BAOR Misc 536

By Alan Gordon

The mid 1970's saw the start of the production of a unique map series comprising 222 sheets, which was designed solely to meet the specific requirements of only 11 officers and 10 SNCOs. Within 15 years some of the sheets had advanced to their 4th edition before great political change brought the need for the series to an end. The series was BAOR Misc 536.

Over 60 years ago on the 16th of September 1946, paradoxically just as the Cold War was beginning, Lieutenant General Brian Robertson for Britain and Colonel General Mikhail Malinin for the USSR signed an agreement establishing military missions to liaise within each other's zones of Occupation Zones in Germany. Somewhat surprisingly the Robertson/Malinin Agreement survived for 44 years, weathering the Berlin Airlift, Cuba Missile Crisis, the crushing of the Prague Spring and all the other hot spots that occurred during the long Cold War.

An unintentional result of the Agreement was that throughout the Cold War teams of uniformed British servicemen travelled legally across most of the length and breadth of the Soviet Zone of Occupation, later generally referred to as East Germany or the DDR, collecting vital first hand intelligence on the Communist forces facing NATO across the Iron Curtain.

The establishment of the British Mission, whose unwieldy title 'the British Commanders'-in-Chief Mission to the Soviet Forces in Germany' was generally shortened to BRIXMIS, was followed by similar US and French Missions although, in each case, they were smaller in size. For their clandestine work, the Mission's three most vital tools were cameras, tape recorders and……. maps, the latter perhaps the most important as their accuracy directly affected safety. Maps at all scales were used but, following the move from 1:100k to 1:50k in the 1960s, series M745 was by far the most important. This article examines the use of M745, its limitations and the overprint revision, series BAOR Misc 536, that provided the solution.

THE MISSION

The Missions were accredited to the C-in-C of the Group of Soviet Forces in Germany and although the German Democratic Republic, the DDR, was formed in October 1949, the Missions never its recognised authority. The DDR in area was 83% the size in England, hence a handful of tourers in 13 cars were to monitor an area roughly equivalent to England south of Yorkshire. Very soon close arrangements were made with the US and French Missions to share the load – and the proceeds.

The Robertson-Malinin Agreement gave Soviet passes to 11 officers and 20 other ranks, whilst the US Mission had 18 and the French only 14. Families were also provided with passes as they were originally expected to live in the East. The Missions' role was to liaise. In the early period the return of bodies and lost soldiers were key tasks but, although liaison remained the raison d'etre, as the Cold War progressed so the intelligence gathering role became progressively more important and increasingly more professional in implementation.

The Missions were not permitted military vehicles and so staff cars were used with BRIXMIS allowed 13 vehicles, each to have distinctive Mission plates. However, as the Cold War progressed these cars became increasingly more covertly customised with the addition of under armour, 4-wheel drive, winches, precise compasses, extra fuel tanks, etc. It is of note that cars were not provided immediately on the establishment of the Mission and so the first ever tour was carried out on horseback – probably the last British mounted military operation in Europe.

The host nation provided accommodation in its Zone, BRIXMIS initially had a mansion in Karlshorst but this was burnt down in orchestrated riots in 1956. Another mansion was then provided in Potsdam but the Mission's main operating base was moved to West Berlin with the Mission House used only as a forward staging post and meeting point for direct dealings with the Soviet authorities. Entry and exit from the Soviet Zone was via the Glieneke Bridge. For over 40 years the only people to use this bridge – literally the bridge between East and West - were members of the Missions and spies, such as U2 pilot Gary Powers and the Russian Colonel Able, when they were swapped.

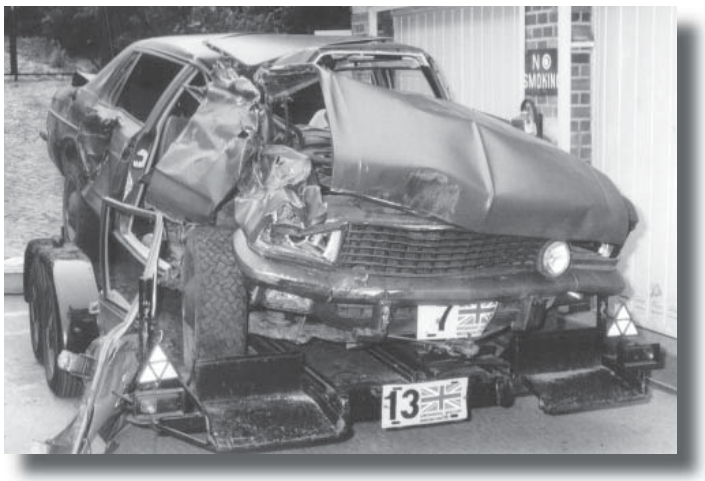
It was always assumed that the USSR placed equal value upon the work of its Missions in the West, known as SOXMIS, or they would have abrogated the Agreement.

The Missions called their excursions into the Soviet Zone "tours", each comprised an officer, SNCO and a corporal driver and generally lasted for 2 or 3 days during which time they sleep by the car in lay-ups usually in dense woodland. In addition to tours mounted in cars there were Top Secret Codeword tours carried out by Mission aircrew who flew a Chipmunk trainer around the 20-mile radius Berlin Air Safety circle. These flights were ostensibly a means to allow aircrew in a ground task, e.g. RAF Mission liaison officers, to maintain their flying hours. There were special operations within tours, for instance, the highly classified scavenging of Soviet barrack rubbish dumps and field latrines – toilet paper was obviously not on general issue – which produced quite stunning intelligence 'wins' in the form of discarded, and often stained, documents.

Tours could go anywhere in the Soviet Zone with the exception of declared Permanently Restricted Areas (PRA) which were changed from time to time. Occasionally, usually due to a major exercise or the transit of new equipment into their Zone, the USSR would announce Temporary Restricted Areas. All autobahns were free to use even if they passed through a PRA, a very useful access tool. The Russian's also put up Mission Restriction signs near to military installations. These had no legal backing but served to whet the Mission's appetite to explore the area.

A Mission Restriction sign – ignored by tours other than as an indication that there was something of interest in the area.

Tours were classified as "operating in a hostile environment". The level of hostility varied but throughout the Missions' existence deliberate rammings of tour cars and shots fired at cars and the Chipmunk aircraft occurred with both the US and French Missions suffering fatalities.



A BRIXMIS Opel Admiral after being deliberately rammed by an East German Army 10 tonne truck.

Each crew member had his own specific responsibilities. The Tour SNCO, who sat next to the driver, was the navigator and it was absolutely vital that he knew at all times his precise location on the 1:50k map, the planned route plus alternatives to the target (often a training area approached by tracks through dense forest), and several options for quick exit and evasion from chase. He was also the crew expert in identifying all Soviet and East German military equipment.

From the very first day of its existence until the end in 1990, there was a BRIXMIS tour somewhere in the Soviet Zone – they never missed a single day.

M745

For political reasons M745 cover was based on the pre-war German borders, less East Prussia, which led to M745 having two different producing nations, the Federal German Republic produced the sheets over its territory and, under NATO Geographic Policy, the US had accepted responsibility for sheets covering the Soviet Zone. Edition 1 cover in the east was a mix of wartime GSGS 4507 and US Army Map Service (AMS) sheets the result being several different specifications within the same series. The eastern sheets were based mainly on the pre war and wartime mapping with only one revision, carried out by DMATC in the mid to late Seventies, during the existence of the Zone.

BRIXMIS occupied the top floor of the headquarters of the British Military Government in Berlin. The building had been built as the reception area for VIP's attending the 1936 Olympic Games. It also housed the Kuppelsaal, an indoor circular arena for boxing and fencing. The Mission's offices

surrounded two sides of this arena resulting in a corridor with a very long curved wall. On this wall a complete set of M745 covering the DDR (245 sheets) was mounted in five sections progressing from north to south along the corridor. Every single Soviet and East German military installation and item of interest, including every single Mission Sign, was marked on this master wall map by means of coloured pins. This was the first port of call in all tour planning as from here the tourer could, by using the grid reference of the installation pin, refer to the Target Files.

Each tour NCO and officer produced their own set of Tour Maps on which they drew the PRAs and unclassified useful information such as lay-bys on autobahns. Initially and until the introduction of series M745 these were the 1:100k cover patched together in sets of four sheets.

With the introduction of Series M745, Tour Maps became standardised as strips running west-east across the country, concertina folded and covered in fablon both for protection and to allow marking that could be quickly removed in an emergency. The full set was always carried with the current strip on the NCO's lap at all times and the remainder by his side. Standard series mapping is what is says - "standard" - produced to a 'one–size fits all' specification that did not fully meet needs of tour crews creeping through the woods of East Germany at night. To customise the mapping, the NCO assiduously added in manuscript all sorts of information that was of use in planning and carrying out a tour. However, although quite brilliant map-readers, they were neither surveyors nor cartographers and each plotted the information he thought necessary in a style that suited him and positioned as best as he could estimate.

The system was that each tourer handed over his set of maps to his successor who replaced them in a piece-meal manner during his time with the Mission. This, together with security restrictions has meant that the only examples available are from the very last RE Tour NCO, Mike Camp, who could not bring himself to destroy his maps on the demise of BRIXMIS.

BAOR MISC 536

By 1974 the M745 sheets were markedly out of date which resulted in a series of incidents on tours. Also, the DDR had embarked on an autobahn building programme that was of great use to the Mission as the new roads transited through PRAs thus allowing access to previously denied areas. The Assistant Director Survey BAOR, Lieutenant Colonel John Henshaw, was invited to BRIXMIS and briefed on the state of the mapping and the ramifications of its lack of currency. This visit led to the secondment of a Survey Technician to BRIXMIS with the remit to identify the Mission's specific requirements and propose options for meeting them.

The first stage of the requirements study was to learn exactly what took place during a tour. This was done through a series of briefings by tour crews to learn what was important and what wasn't, how they used the maps, what was wrong with them, how military equipment was reported, how its location was referenced, how the tour evaded its tail and a myriad of other facts. Next was an in-depth review of each Tourer's set of maps. This revealed bewildering amounts of diverse data recorded in a dozen mutually different sets of symbols, colours and abbreviations. A 'customer survey' was then carried out to ascertain what each and every Mission map user, and a number were not tourers but were backroom intelligence analysts, would like to see on the map, listed in their order of priority.

The requirements study generated a fairly sound understanding of what should be shown by some means on the M745 sheets. Patently a full revision was not possible as that was a US responsibility and, in any case, the sheets were produced to an agreed NATO standard specification that did not include features deemed essential by the Missions. The option proposed was for a single-colour overprint revision similar to the Topographic Information Overprint revision that 14 Field Survey Squadron were carrying out in the 1st British Corps area in the west. Because the Mission was to be the only user of the product, a fairly unique opportunity now existed for Military Survey to produce a truly bespoke map series to meet a user's specific requirements.

In early 1975 AD Survey and the Chief of Mission, Brigadier Lionel Harrod, agreed to a trial that would involve tours being specifically tasked to collect revision data for sheet L1938 Rostock, where a new autobahn was being built southwards to link the port to East Berlin. The data would then be compiled into the overprint and printed by 14 Squadron. The trial was an unmitigated success with the overprinted sheet welcomed by all. As a result the decision was then taken that the Mission would collect revision data over the entire Soviet Zone, less that which was in PRA, and AD

Survey would sanction the production of the overprinted sheets. This was an immense undertaking that would involve driving over every single road and forest track in the country. The project comprised the field revision, compilation and overprinting of 214 map sheets. Although 245 map sheets covered the Soviet Zone or at least a part of it, at this time 31 sheets were completely within PRA, an indication of the immense area devoted to military activity. A Survey Section comprising a SNCO and a Cartographic Technician was established in the Mission to plan and control the project and compile the revision data. The product was to be published as BAOR Misc 536.

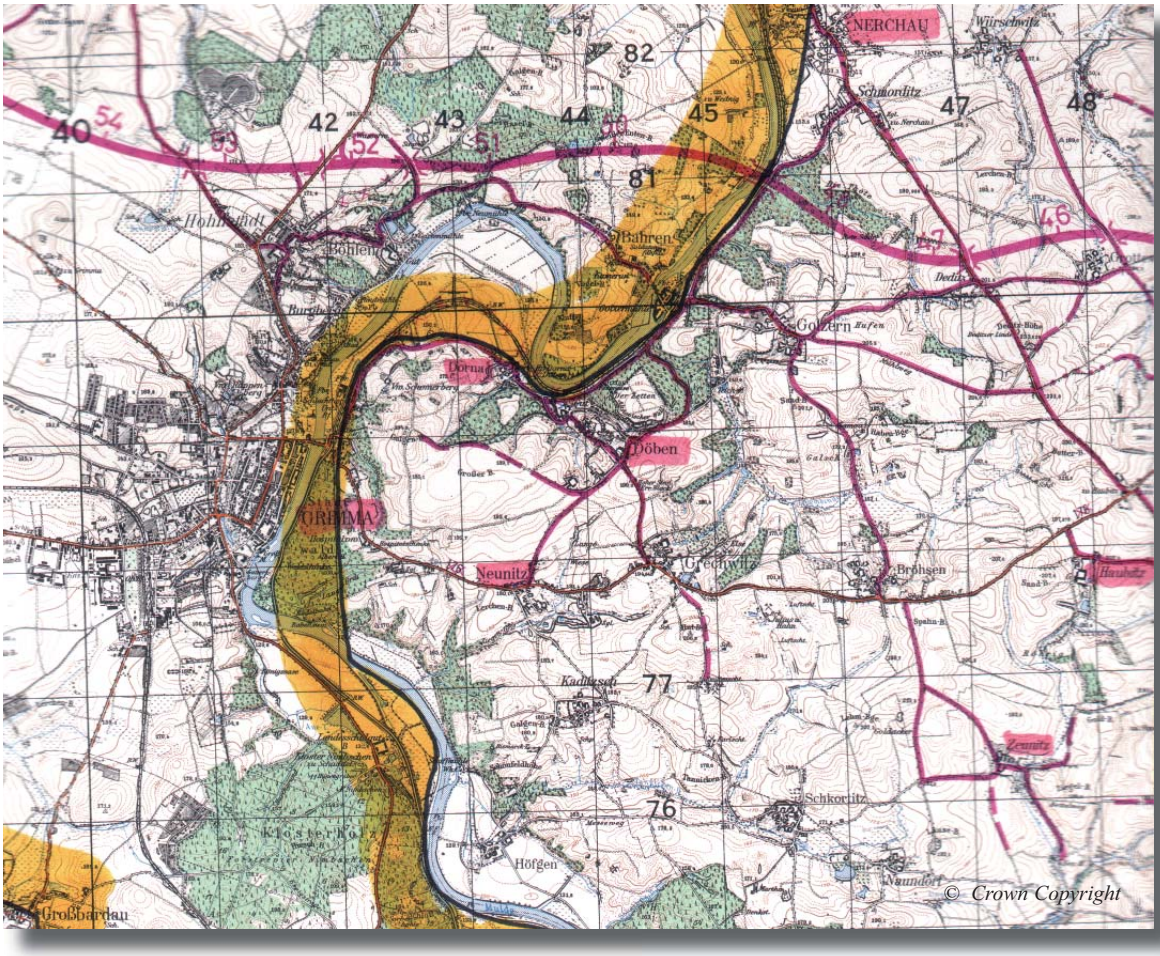
BAOR MISC 536: The Specification

It was decided from the outset not to overprint PRAs or Mission Restriction signs as neither were permanent features and, if they were overprinted, it could weaken a detained tour crew's room for arbitration. It was also stated that no Soviet or East German military information was to be shown, after all, the crews were supposedly liaising not spying! The detail to be included was categorised under the following categories:

- Additions and deletions to the base map detail
- Aids to referencing location
- Aids to operations and evasion

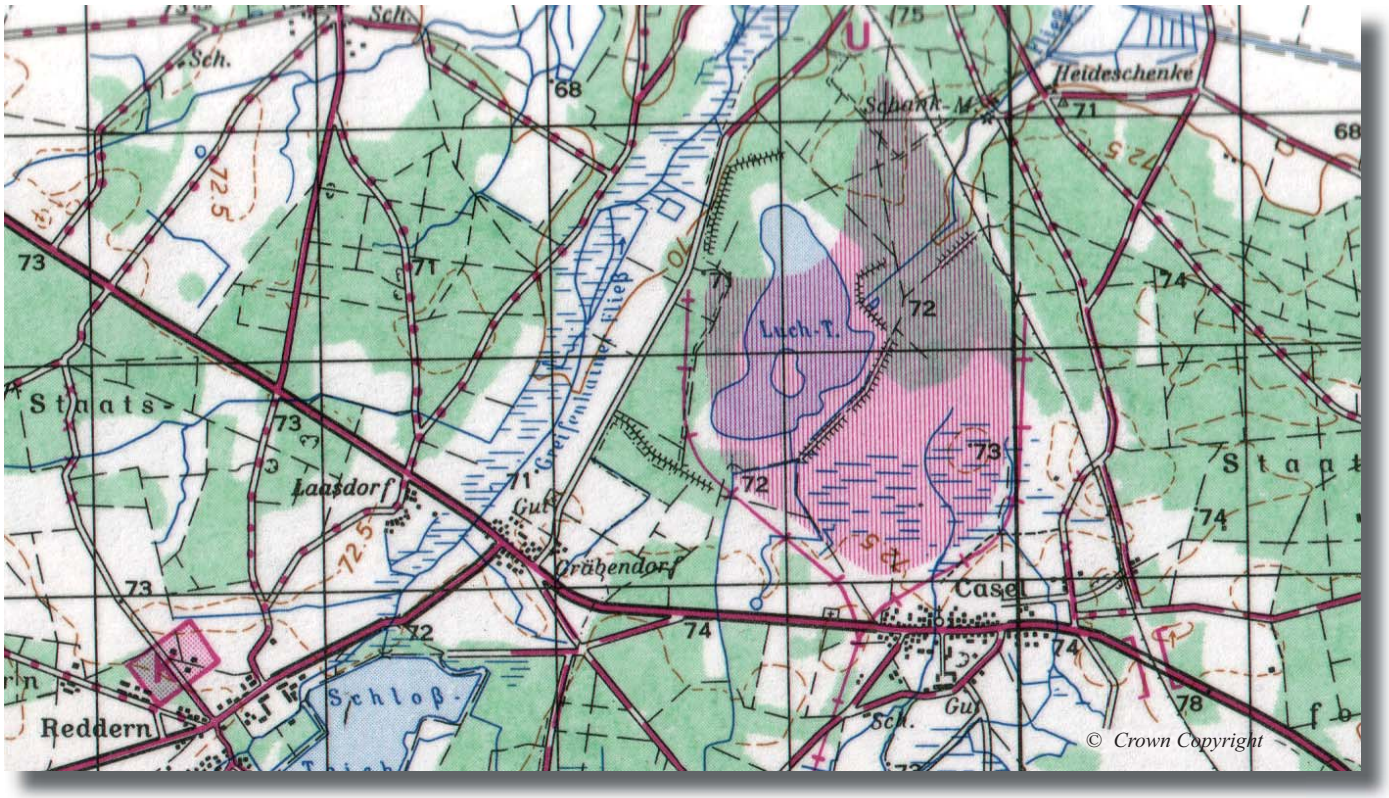
Additions And Deletions To The Base Map Detail

As previously stated, the East Germans commenced a road building programme in the early Seventies that continued until the end of the regime. All new roads were to be surveyed and then overprinted onto the base sheets.

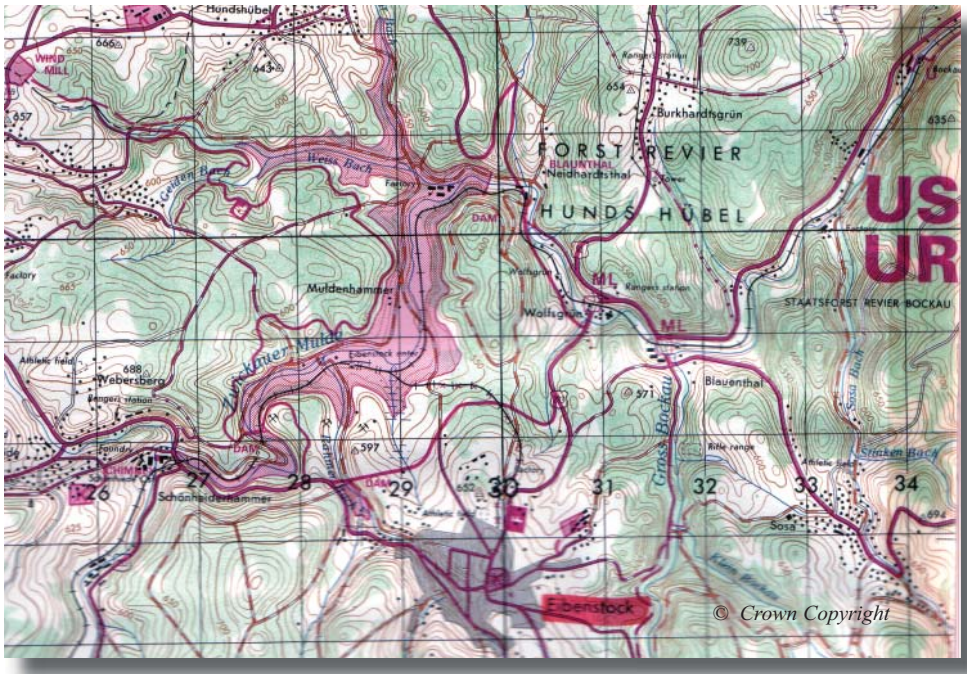


Sheet 4742 Edition 1 extract. The overprint master is hand drawn and the lettering stencilled. The base map was produced by reducing 1;25k sheets hence poor legibility. This is part of a tourer's strip map on which he has shown the boundaries of a PRA in yellow and highlighted village names for quick reference. Note that the newly opened Grimma autobahn allowed tours to transit through the PRA.

In addition to new roads, huge new collective farms, 'kombinats', were built often on 'greenfield' sites. These collectives were a problem to tours as they were always manned and in areas which on the un-amended base map looked empty and therefore suitable for tours to use as overnight lay-ups or to transit through without observation. There were also major urban building projects such as at Auerbach and Halle Neustadt, an ugly rash of concrete tenements built to house those displaced by the vast open cast mining programme in the east of the country. This open cast project was the source of the largest 'area' deletions. Without the planning controls usual in the West, the DDR authorities allowed mining on an immense scale to produce the brown coal used to generate their electricity. Having removed whole villages, the earth was mined, narrow and standard gauge railways built to move the coal and even new power stations erected within the, by now, almost lunar landscape.



Sheet 4350 extract. The hatched area is open caste mining with new rail tracks laid on either side. The 'K' is a collective farm and the pecked tracks are all weather whilst the dotted tracks are usable only in fair weather.



Other major changes included dams and new lakes in the hilly south of the Zone that also changed the entire local road layout – all vital information to crews often moving at speed at night. All of this needed to be mapped and shown on the new sheets.

Sheet 5540 extract. The new dam created a lake and changed the road layout completely. Note the boldly overprinted UTM grid letters.

Aids To Referencing Location

All sightings of military equipment, and they occurred almost incessantly in such a highly militarised country, were reported in a standard format as they happened by the NCO speaking into a tape recorder. He stated time, location, direction of movement, identity, markings and vehicle registration, and any other significant data e.g. clean or dirty. On autobahns and major routes the location was given by the route number followed by the last kilometre marker, 'k-stone', that the car had passed – *"Grimma autobahn going south k-stone 22 BTR 60 PB side number 12"*. On other roads and off road on tracks in woods etc the UTM grid letters followed by a 6-figure map reference gave location. As all marginalia had been trimmed in producing the strip maps, and also the master wall map, the UTM letters were added by hand to the sheet face as were the map sheet numbers and tourers used highlighter on the ladder of grid numbers on the sheet face to read the grid values. It was therefore decided that UTM letters, sheet numbers and route numbers would be shown in bold and that k-stones would be accurately plotted and shown.

Aids to Operations and Evasion

In the main, the tours targets were barracks, training areas, airfields and ranges. There were an incredible number of such installations in the Soviet Zone, indeed, sufficient to support 5 Soviet Ground Armies and a Tactical Air Force plus 2 East German Armies and an Air Force.

The Soviet forces made great use of the rail system to transport its military equipment hence, Missions spent endless hours watching railway lines.

The Soviet forces made great use of the rail system to transport its military equipment and of tactical routes to move from barracks to training areas hence, Missions spent endless hours watching railways and 'tac' routes. Also, the approach to barracks was by necessity via the back door and to training areas by means of tracks through the endless woods or across the vast fields. All this meant that the existence of tracks and fire breaks in the woods and their driveability under different weather conditions was vital information. To that end it was decided that every single track would be driven and classified as either 'all weather loose surface' or 'fair weather loose surface', in addition, all new tracks would be plotted using the trip meter and precise compass that was fitted to the tour car to 'fix' the feature to existing map detail.

Another feature to be included in the overprint was the position of the lay-bys, 'park platz', on autobahns as these provided an opportunity to sit and wait for passing military traffic.

A surprise during the requirements study was the tourer's apparent fixation with railway level crossings. These were in fact a double-edged weapon. On the one hand if they were lit at night

they provided a wonderful opportunity for crews to lie back in the shadows and photograph passing military equipment, kindly floodlit by the Deutches Reichsbahn but, on the other hand, the MfS – better known as the Stasi - used them extensively to attempt to trap and detain tours. Level crossings are used extensively in eastern Germany and they came in a variety of styles; full barrier, half barrier, manned, automatic, lit, unlit and open. It is of note that although the DDR introduced automatic crossings in the Seventies they still manned many of them for two reasons; it helped maintain full employment in a 'communist paradise' and also it was a key instrument in monitoring and controlling movement – crossing keepers were duty bound to report immediately all sightings of Mission cars. Barriers would then often be closed along a stretch of road making movement by the car difficult or impossible although driving around lowered half barriers was a choice, if heart-stopping, manoeuvre.

Tour planning would see the NCO scouring his maps for lit, preferable unmanned, crossings along a stretch of railway track that could be visited in succession quicker than the slow moving military train could travel. The ideal tour saw the crew photograph the equipment on the train at the first crossing, race at breakneck speed along roads and tracks to arrive at the next crossing, ideally with a view of the other side of the train, in time to photograph it all again. It was decided that every crossing in the country was to be visited and classified against the specification.

Another operational feature that was considered was the highlighting of all railway cuttings as these provided a rare opportunity to photograph the top of equipment. However, after much consideration this was not to be included in the already crowded overprint specification.

A feature useful for evading the 'tail' provided whenever possible by the Stasi was the UFO – the Unofficial Fly Off - from an autobahn. Over the years an inventory of points where a tour car, but not a Stasi Lada, could exit the carriageway illegally e.g. down an embankment onto a track, were recorded by Tour NCOs – these were all to be confirmed as genuine 'goers' rather than hearsay from the preceding tourer, and then included on the overprint.

After much discussion it was decided not to print the points where it was possible to do a U-turn from one carriageway to another across the central reservation of an autobahn – that was considered by the Chief of Mission to be contrary to spirit of liaison – although he did not forbid the actual practise itself.

Symbology on the Overprint

After much discussion purple was chosen as the colour for the overprint as it best showed up against the base mapping. The choice of symbol was quite difficult because usually the cartographer has choice of colour, symbol and line gauge to depict features and present information whereas this one-colour overprint would have to show a wide range of features including deletions (done by crosses) using only symbol and width of line.

Communications were shown by means of solid, pecked and dotted lines which gave information on width and going under different weather conditions. Squares and triangles with adjacent letters depicted level crossings, and cross-hatching areas and letters indicated mining and built-up areas.

As the map users first action on receiving a new sheet was to trim off the margins, it was decided that including the overprint legend in the marginalia was pointless and so it was printed on a separate A4 sheet published as OR163.

Mapping Tours

Initially data collection – 'mapping' as it was known - was carried out on an opportunity basis generally en route to and from the tour's targets. However, the early overprinted sheets were so well received that soon tours dedicated solely to mapping were tasked especially during the 'low military activity' season. Occasionally these mapping tours generated an unexpected bonus such as sightings of high value equipment in places and at times unexpected such as the first sighting of the missile system SA10B outside Russia, voted Intelligence scoop of the year in 1989 and the cause for a major rethink in some aspects NATO defence policy.

Attempts were made to spread the load by tasking US and French tours but their fewer numbers and the difficulty in managing the practicalities of tasking and debriefing led to the abandonment of the idea although they were supplied with the overprinted sheets.

Production Method

For the first few sheets, the system was for areas of interest e.g. a track junction, to be circled on the map, given a reference number that linked to a question on an attached questionnaire. However, once the decision had been made that every single road and track were to be driven and assessed, the tour NCOs directly annotated the map face with the relevant information and new detail carefully plotted relative to existing features.

After each tour the NCO formally debriefed to the Survey staff. The revision data was then drawn onto a master overlay registered to the master sheet by means of corner ticks. The revision information was drawn to the specification using Rotring pens with letters/text added by stencil or Letraset. A follow-on Tour Sheet was then produced with the already collected information drawn on it. The next tour would then proceed to work in the un-revised area. When all the information covering a sheet, less the area in PRA, had been collected the master overlay was sent to the Survey Directorate at HQ BAOR where it checked against other sources and then tasked to 14 Field Survey Squadron to overprint. 3 BAOR Map Depot then distributed copies back to BRIXMIS, to the US and French Missions and to relevant users in the intelligence community. Print runs were in the order of 300 to 400 copies.

As overprinted sheets became available they were eagerly inserted into tourer's strip maps and into the Master Wall Map.

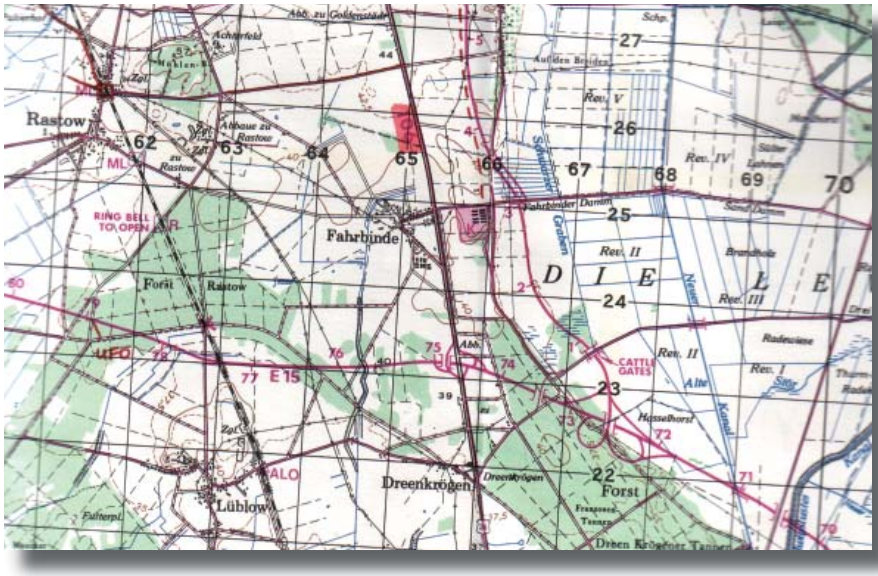
Editions 2, 3 and 4

Edition 1, comprising 214 sheets, was completed in early 1979. At this time Edition 2 sheets of M745 produced by DMATC became available. It was decided that these sheets, although showing major revisions such as the new autobahns and areas of opencast mining, did in no way replace the need for the specialist overprint but were to be used as the base maps for a second edition of BAOR Misc 536 that was to produced to more refined cartographic standards. The geographic team in Brixmis grew to 4 including an RAF air cartographer from AIDU. They continued to produce the master revision compilation that was then used as the basis for a scribed and typeset product that was produced by the Survey Production Centre RE (BAOR) or 14 Squadron.

On Edition 1 roads were left un-overprinted unless there was a change in their classification but on subsequent editions all roads that had been driven were overprinted so that all communication details that had been surveyed/driven were in the same reassuring purple.

Over the ensuing years the PRA was changed a number of times causing areas to emerge from restriction thus bringing further sheets into the series which eventually totalled 222 sheets.

In due course Edition 3 was put into work and in some cases sheets had progressed to Edition 4 when political events moved in a previously unimaginable direction and suddenly the regime that appeared to be as cast in concrete its wall around Berlin, crumbled and fell in 1989. The Mission's work continued during the withdrawal of the Soviet Forces but mapping ceased, as it was obvious that the Mission's task was rapidly coming to an end. The last tour took place on the 1st/2nd of October and BRIXMIS was officially disbanded on the 31st of December1990.



Based on a presentation given at the BCS/DSA Seminar on 24th May 2006.

Sheet 2523 Edition 2 extract. This shows the finer cartographic quality of the second edition, lines are scribed and the 'k-stone' values typeset. The square symbol indicates a full barrier level crossing and the triangle is a half barrier. M is manned, L shows that it is illuminated at night, O is observed, R is remotely controlled from a nearby manned crossing. The X indicates that it is not possible to cross the rails even though there is a track on both sides. UFO is 'unofficial fly off', a point where a tour car could exit an autobahn onto a track.

The Human Statue of Liberty

Fred Noseworthy, a Canadian military surveyor well known to many readers, sent Mike Nolan this photograph showing 18,000 American soldiers forming a human Statue of Liberty.

Although having no geo/hydro relevance at all it is an amazing feat which begs the questions – how did they organise it including having some in different colour uniforms in order to get the contrast, how and with what camera was the photograph taken (possibly from a tethered balloon in order to frame the image and reduce image movement) and of course, how loud was the RSM's voice to be heard saying..... *"move back number 35 in the 64th rank – STAND STILL"*.

STANDING TALL Titled "Human Statue of Liberty," this image was taken at Camp Dodge in Iowa and used eighteen thousand men.

MAKEFAST BISA
(Battlefield Information System Application)

By Major Clive Nodder RE, - SO2 C4ISTAR, HQ E-in-C

The Challenge

One role of the Royal Engineers is to assist land based forces in achieving their mission objectives by maximising their mobility, survivability and sustainability through the provision of a wide range of specialist support services such as bridge building, mine clearing and demolition.

Historically, the Corps has been reliant on manual, labour-intensive methods of working, (broadly unchanged since the Second World War) that can be slow and resource intensive. They could also give rise to errors. For example, the surveying and siting of a particular asset, such as spanning a river with a temporary bridge, has been heavily dependant on the skills and experience of the Royal Engineers using measuring equipment and whatever paper-based mapping was available to determine the optimum position. However, if the unit tasked with laying the bridge does not share the same mapping and positional awareness as the rest of the battle group then the possibility exists that the bridge could be constructed in the wrong location. Even if only a few metres away from where specified, this can compromise its use and in some cases necessitate its re-siting. Even when the bridge is laid accurately it may be found to be of the wrong specification for the conditions.

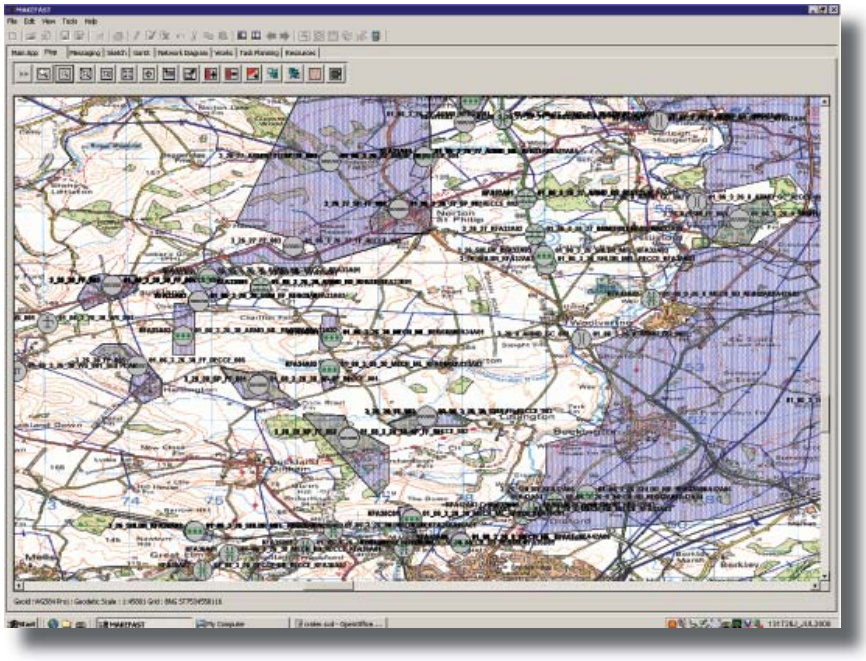
The Corps sought a new approach to planning and tasking that would achieve greater efficiency and increase its capability to respond effectively to operational demands.

The Solution

MAKEFAST is one of a number of BISAs (Battlefield Information System Applications) designed to operate through the developing BOWMAN communications infrastructure.

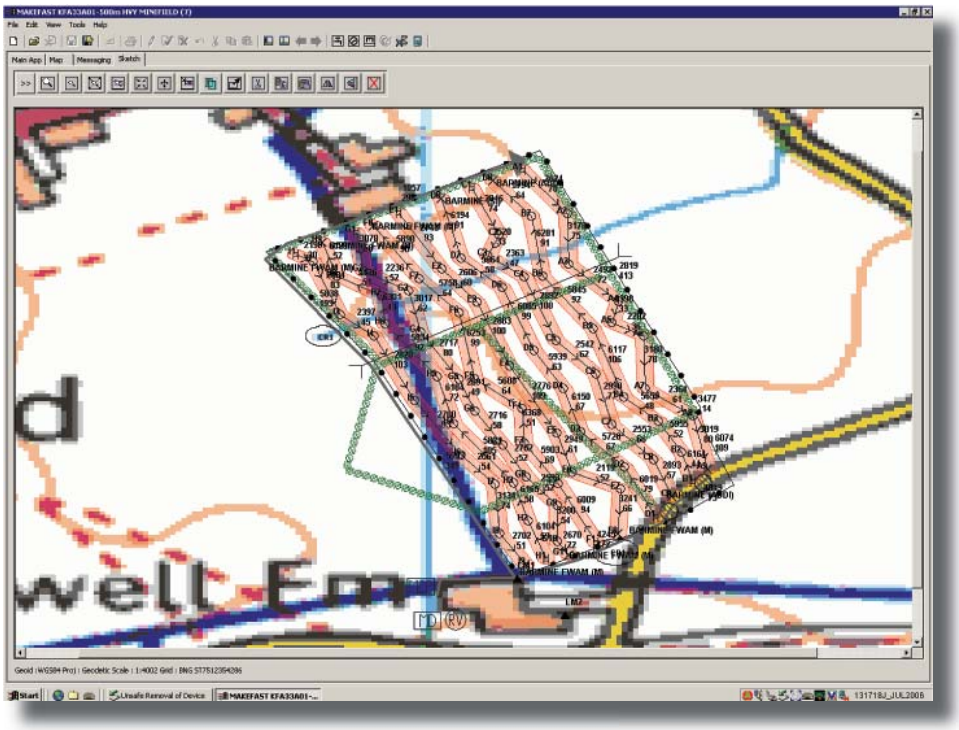
The MAKEFAST BISA has been developed to provide a range of software tools comprising a comprehensive engineering planning and control package for the combat engineer role, supporting mission-critical tasks such as gap crossing, provision of services, minefield management and demolition work. As far as possible, the system replicates the existing business process of the Royal Engineers. MAKEFAST will assist with the planning, designing, resourcing and management of these types of project. Once in full service, MAKEFAST will be integrated and interoperable with other information systems within the land component of any operation.

ESRI's Geographic Information Systems (GIS) technology is used for the mapping component within MAKEFAST. It allows the Sappers to precisely locate tasks and the appropriate resources they require to fulfil the objective and plan their deployment. Utilising digital mapping in raster and vector format, the system allows detailed overlays to be quickly drawn and shared between HQ and operational staff, giving everyone the same view of the task and its precise position. The relative location, and therefore proximity of assets, can also be shown thus improving situational awareness and informing decision making.



Map display tool – knowing exactly where assets are in relation to tasks

To make the most of the new capability, MAKEFAST also includes a detailed inventory of available assets. Each asset, for example a water bowser, has its own icon within MAKEFAST's sketching tools which allows it to be easily dragged and dropped onto the maps. In this way, scale drawings and geo-referenced overlays can be quickly and intuitively created for all personnel involved. Other functions, such as a gap-crossing tool, allow the engineers to more accurately calculate the correct span, loadings and therefore equipment requirements.



The position of completed tasks can be accurately plotted and shared

For those responsible for tasking this speeds up the briefing process while ensuring a clear and accurate picture is provided. For those responsible for deployment, it means greater accuracy in the siting of the right assets for the task, with the potential to save valuable time which can be applied to other requirements.

Benefits Delivered

The MAKEFAST BISA has been received very positively in trials with a number of key benefits already apparent.

Increased Business Process Efficiency

The mapping component complements the task planning and resource management functions within MAKEFAST by providing a common geographic reference at reconnaissance, tasking, and construction stages. The installed asset can also be more efficiently geo-referenced on completion, allowing its position to be more quickly and accurately communicated to end users.

Greatly Reduced Task Time

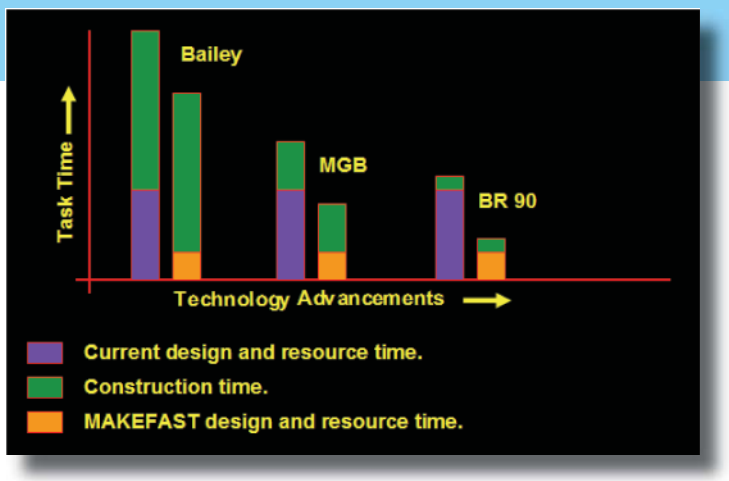
The ability to clearly visualise a task and more easily share this information via BOWMAN, coupled with MAKEFAST's improved design and resource ordering capability is expected to significantly reduce task time, in some cases by half. This will have a major benefit on agility and resource availability, allowing the Royal Engineers to better keep pace with operational tempo.

More Effective Information Sharing And Communication

In line with other BISAs planned to utilise the BOWMAN infrastructure, MAKEFAST is fulfilling its objective of promoting greater collaboration, sharing of common data and processes and the reduction of information silos, enhancing overall operational efficiency and effectiveness.

The Future

After positive trials in 2007, MAKEFAST is expected to enter service in early 2008. The initial functionality already caters for a number of critical areas and has been shown to enhance business processes, save time and increase collaboration.



Overall task time for different bridging systems is reduced by streamlining design and resource ordering processes

Athletics Training with Buller Kent

By Bev Hill

Sometime in 1961 I was the Squadron Orderly Corporal working under the SSM, Buller Kent, in 13 Field Survey Squadron at Fernhurst. One Wednesday afternoon the Squadron was directed onto the sports field to train for the forthcoming Minor Units Athletic Championships.

Buller Kent was a big man and particularly good at throwing the hammer. Having returned to his office, from which he could see the sports field, I brought his attention to the diminutive figure of the SQMS who was slowly making his way across the field dragging a hammer behind him. The SQMS was on extended service and close to retirement. He was wearing an oversized pair of PT shorts and obviously struggling with the weight of the hammer. The Squadron stopped their athletics training and watched the comical old figure as he struggled toward the throwing circle. Buller was beside himself with laughter as the SQMS eventually managed to lift the hammer off the floor but then, seemingly with the greatest of ease, he pirouetted several times and launched the hammer across the sports field. The throw would have won the Major Units hammer event with ease.

In total amazement Buller watched from the window as the SQMS slowly retrieved his hammer and, to much applause from the unit, he staggered back to his store.

Buller later found out that the SQMS had put together a lavatory ballcock and chain and painted it black. It was a great set up and brilliantly executed.

Article first published on the REA Military Survey Branch Website

Fernhurst Camp Parade Square in 1961.
Photo: James Prain

End of an Era – "Georgie", Commander JAGO's PA Retires

By Major Richard Blunt, COS JAGO

The 31st of January 2008 will be a day to remember for many as "Georgie", the PA to Commander JAGO, retired after 19 years in the job. She takes with her all that experience gained throughout the many changes that have occurred to the organisations within Hermitage and therefore it was a very emotional day for all concerned.

Georgie with 'her' Commanders at her farewell lunch.

During her time at Hermitage she has been PA to some eight commanders, building a reputation for efficiency, conscientiousness and as a great person to work with. As a mark of the high regard that she is held, **all** eight former commanders hosted a lunch for her in the Officers Mess at the end of March. A fitting tribute to her years of loyalty and service.

Her leaving day was planned with a high degree of secrecy, so much so that she had not finished the work she wanted to get done prior to leaving! We hijacked her from her desk and took her down to the conference room where some 60 people, both military and civilian, were there to say goodbye with a glass of champagne. The present Commander, Colonel John Kedar, made a speech covering some of Georgie's exploits over the last 19 years. He highlighted the fact that she was an integral and hugely respected member of the team and she will leave a large gap both to her unwavering support to Commanders but also to everyone within the Intelligence Collection Group. Georgie replied thanking everyone for their support and friendship over the many years and said that she would really miss working at Hermitage. There were presents from JAGO staff, cards with messages from everyone at Feltham and private cards from previous Chiefs of Staff and others.

In order to send her off in style we commandeered the use of a Morgan open top sports, car under the auspices of Major (Retired) Tony Keeley, to take her to a lunch in a local pub. Despite the terrible weather and the roof on the car having to be up, all staff from JAGO clapped and cheered and she drove away from the Headquarters for the last time.

There were at least 50 people who attended the lunch at the Sun in the Wood pub and at the end of the lunch the Commander again asked us all to raise our glasses and provide a toast to, "Georgie". She was then driven home to start her well-earned retirement!

We will all miss her dearly not working here anymore but she refuses to sever all links with Hermitage as she will remain an Honorary Mess Member of the Warrant Officers and Sergeants Mess. We are sure everyone will continue to enjoy her company and sense of fun at the many social functions she will no doubt attend. The end of an era, the start of a new one for all concerned.

Postscript by Peter Walker

On 31st March 2008 a lunch was held in the Officers' Mess at Hermitage to mark the retirement of Georgie, the PA to the Commanders at Hermitage from 1989 to 2008. The lunch was attended by all eight Commanders who she 'instructed' in their duties. Present were Major General Mike and Mrs Margaret Wilson, Brigadier Andrew and Mrs Sally Hoon, Brigadier Peter and Mrs Lynne Walker, Colonel Chris and Mrs Jan Dorman, Brigadier Nick and Mrs Karen Rigby, Colonel Gus and Mrs Myra Cross, Colonel David and Mrs Mhairi Attwater and the current Commander, Colonel John Kedar. Georgie was accompanied by her husband, Peter, and she was presented an engraved crystal glass pedestal and globe by all of her Commanders, past and present. We all wish her the very best for her retirement. Hermitage won't be the same without her!

Georgie whisked away in Tony Keeley's Morgan.

4th Durham Survey Regiment RA (TA)

By Jim Whetton

This article discusses the activities of the 4th Durham Survey Regiment RA in World War 2. This was one of 12 regiments which incorporated survey, flash spotting and sound ranging expertise to support the work of Royal Artillery regiments in particular. A history of the regiment has already been recorded by its first two COs and its activities are also included in Massimo Mangilli-Climpson's monumental, detailed account of the work of all 12 artillery survey regiments in World War 2. The present article draws especially on these sources; it considers first the role of the founding CO, Lieutenant Colonel John T Whetton, in establishing then leading the regiment, then goes on to examine evaluative questions.

Lt Colonel JT Whetton DSO, OBE, MC. First CO of the 4th Durham Survey Regiment RA.

A Reluctant Surveyor

John T Whetton was a driven man, energetic and ambitious, a disciplinarian who demanded the utmost from his men. Recruits to the 4th Durham were soon to discover this when he agreed to raise a new TA regiment in 1936. This did not endear him to all members of the regiment but, it is suggested, it contributed significantly to the fact that the 4th Durham was an especially active and successful artillery survey regiment.

Born in October 1894, John T Whetton was one of the oldest COs in the army in 1939 and the oldest member of the 4th Durham. One of 13 children, he had already had three careers, the first (briefly) as a coal miner, the second as an infantryman in World War 1, the third as an academic. His first ambition had been to get out of coal mining, the occupation of his family for several generations. The tragedies of World War 1 provided enormous opportunities for him; as colleagues were slaughtered he rose rapidly from private to captain. His classrooms were the nightmares of Loos, then the Somme, then Passchendaele and, finally, North Russia. Amazingly he survived all these, though his regiments were decimated twice in the trenches of France.

The war provided the motivation to go to Leeds University – which would not have occurred to him in 1914. After graduation he embarked on an academic career, showing the energy and drive which had characterised his army career, and was promoted rapidly. He was a Reader in Mining and Surveying and seeking a Professorship when he was asked to form a new regiment in 1936. Given his age – he was 45 by the time war began - and academic ambition, it would have been understandable if he had declined the request.

Brothers in Arms: John T Whetton is on the right, an Officer Cadet in the Kings Own Scottish Borderers, with his eldest brother James, a Sapper (tunneller) with the Royal Engineers. They were both injured on the Somme and, after convalescing in England, John completed his officer training course, before returning to France in 1917. James was unable to return to France but died of the miners' disease, Phthisis, in 1918.

Raising a Regiment

He was a reluctant surveyor but he was also a man of his generation, to whom doing his duty was of primary importance. He accepted the invitation and, from that point on, threw himself energetically into raising the new regiment, promoting artillery survey as a good career. He persuaded local professionals to become officers, alongside a small number of experienced men transferred from other regiments. It was notable that four future COs of other survey regiments were recruited to 4th Durham in those early days.

He was particularly fortunate in recruiting Sergeant B A ('Jock') Curtis, who had all the professional experience which the CO and many of his new officers lacked. Sergeant Curtis proved to be an extremely popular member of the regiment, if a hard taskmaster, who rose to become Major and 2 i/c of the regiment.

Captain – now Major - Whetton was interviewed by the military correspondent of the Northern Echo, which reported that:

"Well-paid recruits will become survey experts

A new Unit ...whose officers will be technical experts, is to be established on Tyneside this week. The tuition and training will be specially suitable for young apprentice land and mine surveyors, civil engineering surveyors and linesmen, and should provide a great asset to them in their civil occupations…. Rates of pay are much higher than those of ordinary units as the following comparative table shows:-

	Rates per day	
	Normal	*Survey*
	s. d.	*s. d.*
Battery Sergeant Major	*8 6*	*10 9*
Sergeant	*6 0*	*8 3*
Bombardier	*4 0*	*6 9*
Gunner	*2 0*	*5 0*

He was highly successful in promoting the regiment and very soon large numbers of well-qualified personnel were recruited, which served the regiment well later in the war. Small sections frequently had to operate independently, to service a variety of artillery or other units at one and the same time. The CO was confident that his officers were fully capable of operating with considerable autonomy. He was not a natural delegator, however, and was able to annoy officers and men frequently by excessive supervision.

This contradiction is a central feature of his management of the regiment. He himself was a professional scientist, a technically competent researcher and innovator. He chose men with similar qualities, tested them and was able to develop great confidence in them. "My lads", as he referred to them, especially those recruited in the early days in the North-East, knew that he would support them vigorously if any doubts were raised by non surveyors about their work. But he had an irritating tendency to interfere in relatively trivial, non-technical matters, especially if it seemed that officers outside the regiment might have a low opinion of his soldiers.

This seems to have stemmed from his own anxiety as a non-professional, surrounded by career officers leading other regiments. He was always conscious about the doubts raised early in the war concerning the value of artillery survey, and the need to combat this. Members of the regiment felt that he was constantly volunteering them for non-survey duties and, sometimes, putting them in extra danger by doing so. But this was really an effort to raise the regiment's profile and find new ways in which a survey regiment could offer more support to others.

'Topo's' tottering towers of Tobruk: 80ft observation towers invented by Major 'Topo' Kellett of 4th Durham.

4th Durham Landing Party, ('Y' Troop) Arromanches: Loading up ready to move inland, D Day afternoon, 6th June 1944.

His anxiety may have stemmed, too, from his consciousness of social class differences in the army, given his own relatively modest origins. He tended to conceal these origins and, indeed, the fact that he had served in the ranks for much of World War 1. Rather than trying to seek popularity among his young colleagues, he appeared aloof and arrogant.

The Regiment in Action

In late 1940 4th Durham sailed for North Africa, where it was the main artillery survey regiment for much of the North Africa campaign, serving in Egypt, Eritrea, Greece, Palestine, Syria, Tunisia, Libya and Sicily. (It was the only artillery survey regiment to serve in all these theatres, including the battles of El Alamein in October 1942). It then returned to Europe and served throughout the European campaign. (Lt Colonel Whetton was wounded at Amstenrade, Holland in December 1944 and discharged from the Army. He was replaced by Lt Colonel Robert Ogden).

In evaluating the performance of the regiment, assessment by 'users' of its services, senior officers and artillery units, is of primary importance. With typical generosity **Lt General Sir Brian Horrocks** paid an extraordinary tribute to the Royal Artillery and to the 4th Durham in particular, in his forward to the history of the 4th Durham.

> *".... Although I am an infantryman, and proud of it, in my opinion, the Royal Regiment of Artillery did more to win the last War than any other arm of the Service, and the core of the R.A. was the fantastic accuracy of their Survey Units. This enabled me, as a Corps Commander, to switch the fire of several hundred guns in a matter of minutes, and thus bring down a devastating concentration on some vital sector of my Corps front....*
>
> *... At the beginning of the last War, Survey Units were still very "rare fish" indeed. When, in December, 1940, the 4th Regiment arrived in the Middle East they discovered that they were the only Survey Regiment in this theatre of war, and consequently were constantly in demand, sometimes batteries by themselves, sometimes the whole Regiment. .... They were active from Alamein on, with their OP.s always well forward: their last battles in the Middle East were in Sicily, from where, after three years' active service, they were brought back to the UK in preparation for the landings in Normandy.*
>
> *From D-Day onwards I am glad to say they were always with XXX Corps, and I honestly do not know how we should have got on without them. They travelled many miles along the Club Route, from Normandy to the Baltic, and fought many battles on the way. The only unit I can think of which saw almost as much fighting was the famous 50 Division, with which they had "grown up" in Northumberland and Durham before the War.*
>
> *.... Every man who served in the 4th Survey has the right to hold his head high, knowing that he did more than his share in winning the last War".*

General Sir Bernard Montgomery too singled out 4th Durham in an appraisal at the end of the Africa campaign. In a letter to the CIGS, General Brooke, in 1943 he recommended that:

> *".... for the good of this war as a whole, you ought to ship 30 Corps home to England. It at present consists of 30 Corps HQ, 30 Corps troops. 50DIV, 51 DIV. ... In the*

Corps troops you have an Artillery Group that is probably unequalled anywhere for knowledge and experience; it is 7 Medium Regt, 64 Medium Regt, 4 Survey Regt. (Author's emphasis).

These units have fought together for a year and are a great team. It seems to me that if you get home to the UK the Corps HQ and the Corps Artillery and the two Divisions of the Corps, and you keep the whole party together in England as a Corps, then you will have a Corps that has taken part in every type of fighting, which is a superb team, and which could be a model for the whole army in England to study. To break up such a weapon would be a thousand pities—such an experienced Corps would be worth untold gold when it comes to a cross-Channel venture….".

If we consider what are the main indicators of success for an artillery survey regiment, it seems clear that such assessments by senior military leaders are especially important. Simply: do they, and the units which are supported by the surveyors, feel that the surveyors are doing what they need and doing it well?

Other Indicators of Achievement

What other, detailed indicators may be used to assess their work? Massimo Mangilli-Climpson has put an enormous amount of effort into producing the data which enable us to compare the different survey regiments, focusing on survey schemes produced and numbers of target locations identified. The former indicates amount of work carried out and on this, of course, 4th Durham's record is outstanding. The latter is a more direct measure of effectiveness. On this indicator, locations, it may be seen in Mangilli-Climpson's data that the 4th achieved an average performance only, despite the fact that they were by far the most experienced regiment.

Mangilli-Climpson summarises the work which has been done to interpret such data. He points out that regiments did not use standardized counting methods and some might include quite suspect locations. Physical settings, too, made it easier or more difficult to obtain locations, for example, a unit which was working in mountainous areas would have great difficulties, as would one working in unfamiliar climatic conditions.

Another often-used indicator is the numbers and kinds of decoration earned. In this respect it may be seen from Mangilli-Climpson's research that the 4th did extremely well, even allowing for their longer exposure to dangerous conditions. In particular an extraordinary number of Military Crosses and Military Medals were awarded. It is possible, of course, that COs may vary in generosity in recommending awards, but these figures are relatively reliable as recommendations are subject to independent scrutiny.

Caumont Water Tower, Normandy: Bdr Turnbull and theodolite descended rapidly when German guns began firing at his temporary observation post.

Finally, it is interesting to reflect on the extent of casualties as an indicator of (poor) performance. As for other indicators great caution is needed in assessing such data. Most obviously, data are influenced by levels of dangerousness of situations faced. Members of a survey regiment are often well forward, and constantly under artillery attack, but they are not engaged in direct combat as are infantry or armoured units. Comparison between survey units has some validity, however, and it may be seen in Mangilli-Climpson's research that, when allowing for their long involvement in war situations, the 4th suffered a remarkably low number of casualties.

This is despite the fact that a large number of members of the regiment became prisoners of war when Tobruk fell in June 1942. Tragically, 25 of them died while en route to captivity on the Italian ship *SS Scillin*. Even more tragically, it eventually became known that the ship was sunk by a British submarine - the captain did not know that SS Scillin carried POWs. It was recognized in the regiment that safeguarding highly skilled colleagues was a very high priority for the CO, but in the fall of Tobruk and subsequent deaths there was nothing which he and his officers could have done to anticipate or prevent these tragedies.

In Summary

It is appropriate to end by quoting the citation recorded when the CO was awarded the DSO in 1943. The regiment had many miles to travel after this, but the citation is unusual in emphasizing key strengths of the regiment as a whole; in effect it is a tribute to all members of the regiment. The citation says that the award was made:

> *"... for devotion to duty, great enterprise, and the capable handling of his regiment over the period 23rd October 1942 to 17th February 1943.*
>
> *Lt Colonel Whetton has shown great drive in the handling of his regiment. Under his command his survey regiment has never failed to produce all the data etc necessary. Flash spotters have been sited to the best advantage.*
>
> *It was not generally believed that survey could be used during fast-moving operations, but Lieutenant-Colonel Whetton and his regiment have shown that survey properly handled can be made available over a wide front in an incredibly short space of time.*
>
> *All the officers and men of his regiment have proved themselves possessed of a cold -blooded courage that deserves the highest praise, and they have carried out their tasks under the noses of the enemy, and frequently under fire, without any failures, though they never had the opportunity to strike back themselves.*
>
> *It is considered that the Royal Artillery owe Lieut.-Colonel Whetton and his regiment a great deal, and that he has personally contributed largely to their success."*

The CO had been wounded twice in the two wars and Lady Luck smiled on him on both occasions. Wounding on the Somme in 1916 allowed him to go to officer training school and begin his commissioned career. Wounding in Holland led to his early discharge in 1944, which enabled him to apply before the war ended for the Professorship at Leeds. Lady Luck also smiled on most members of 4th Durham but, tragically, not on them all.

[1] JT Whetton and RH Ogden 1978 **Z Location or Survey in War: the story of the 4th Durham Survey Regiment RA** http://www.duffy-eu.com/94loc/z_location.pdf

[2] Massimo Mangilli-Climpson 2007 **Larkhill's Wartime Locators: Royal Artillery Survey in the Second World War** Pen and Sword Books Ltd

[3] Nigel Hamilton 1983 **Monty, Master of the Battlefield 1942-1944**, p 428 London: Hamish Hamilton

[4] See: BBC WW2 People's War archive:
http://www.bbc.co.uk/ww2peopleswar/user/48/u844948.shtml
and: 'Proof that POWs were killed to protect secret':
http://www.thisisthenortheast.co.uk/the_north_east/archive/2003/05/09/

Update from NATO Allied Command Operations

By Commander Tim Reynolds RN, SHAPE J3 METOC

With more than fifty thousand troops committed on three continents, NATO is now busier operationally than at any time since its formation in 1949. This, together with its recent expansion in membership to twenty six nations, means that NATO remains a key security organisation in the 21st century.

Within the NATO Command Structure (NCS), Allied Command Operations has approximately 40 Meteorological and Oceanographic (METOC) personnel within various Headquarters in Europe. In addition about 20 METOC personnel from the NATO nations are involved in delivery of METOC support in theatre in Afghanistan and the Balkans. Within NATO, Hydrography and METOC remain distinct disciplines, the former within J2 combined with Geographic and the latter part of J3.

Our main focus recently has been the implementation of the Integrated METOC (IMETOC) concept, approved by the NATO Military Committee in 2005. This seeks to improve information coherence through the Recognised Environmental Picture (REP). New business practices have been developed within the NCS and Lead Nations (LN) have been identified as primary providers/coordinators of METOC support for specific operations. This included the UK taking the LN role for the NATO Response Force (NRF) until the end of 2007.

Issues for the future include maintaining support to current operations, supporting transformational initiatives and replacement of the current generation of METOC systems used within NATO

FWOC AND LEAD NATION SUPPORT TO THE NATO RESPONSE FORCE

By Lieutenant Commander Jez Braithwaite RN
FWOC Contingent Operations, Northwood Command Centre

Following the stand up of the NATO Response Force (NRF) it was decided that in keeping with the NATO Integrated Meteorological and Oceanographic (IMETOC) Concept that there would be a Lead Nation (LN) for environmental support and provision of the Recognised Environmental Picture (REP), ensuring "one theatre, one forecast".

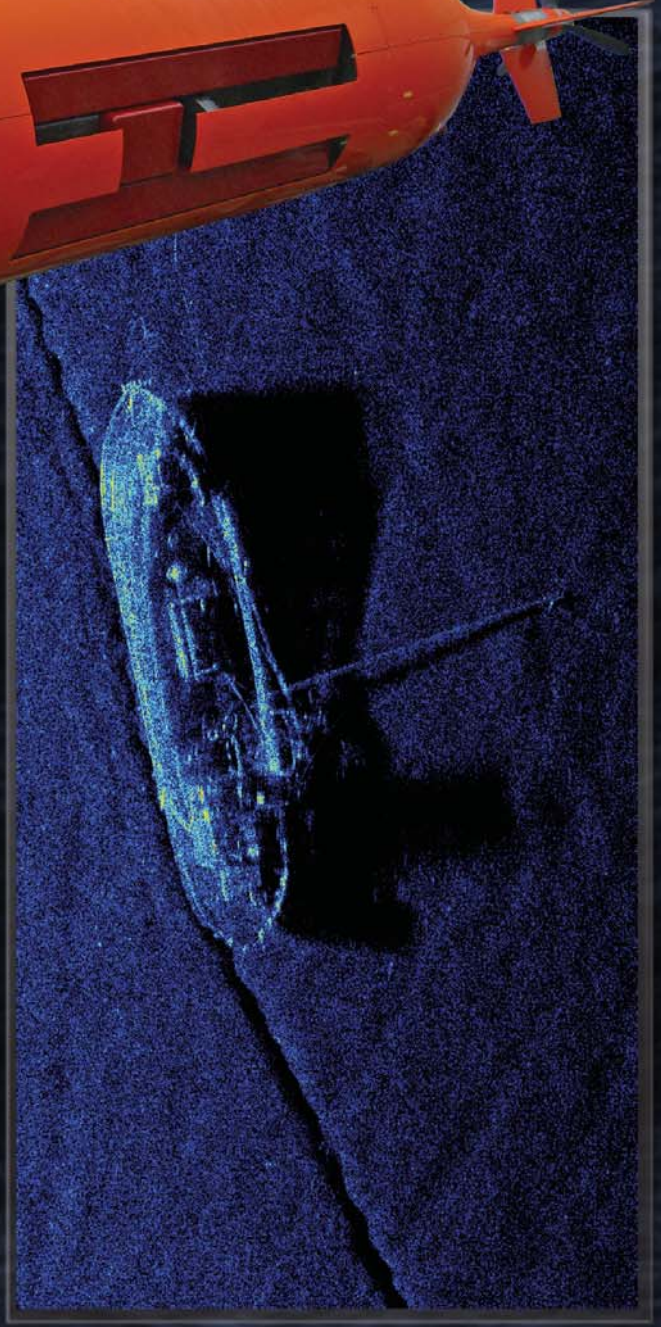
REP - *'The complete and seamless depiction of relevant geospatial, oceanographic and meteorological information designated for the planning and conduct of joint operations in a specific area at a specific time'*

The UK accepted responsibility as LN for NRF rotation 7, 8 and 9. This meant that we were responsible for the coordination of the provision of the REP not only for NRF activations, but also for all exercises and certifications within our period of tenure. UK involvement saw a very close liaison between the Fleet Weather and Oceanography Centre (FWOC) at Northwood, UK Meteorological Office (UKMO) in Exeter and the Defence Met Centre (DMC) with Air Command at High Wycombe.

The first certification exercise for rotation 7 involved Ex Steadfast Jaguar in 2006 and was the proving ground for UK delivery of the REP. Work started long before the exercise at the Initial Planning Conference where it was decided what products would be provided. FWOC, UKMO and DMC were all heavily involved in the planning cycle as the REP product set was finalised. UKMO provided personnel from various Met Centres in the UK to work alongside the FWOC Current Operations team during the exercises themselves. The division of labour was such that the FWOC team set up the automated products and covered the maritime aspects, whilst the UKMO forecasters dealt with the aviation and land aspects.

The type of products provided ranged from standard analysis and prognosis charts, harbour forecasts, cross sections, Meteograms, Unified Weather Forecast graphics and discussion, as well as NBC information and forecasts. In addition to these manual products, the usual suite of automated products was provided (see below for examples of products).

HUGIN 1000
Autonomous Underwater Vehicle



HUGIN 1000 is 75 cm in diameter and is available with 1000 m and 3000 m depth ratings. HUGIN 1000 is built with a three module structure – standardized aft and front sections and one or two modular midsections. The midsection(s) can be configured with a wide range of payload sensors like sidescan sonar, synthetic aperture sonar (HISAS), multibeam echo sounder, sub-bottom profiler, fishery sonar, laser plankton counter, etc.

The power source is a pressure tolerant lithium polymer battery providing an endurance of approximately 24 hours at four knots (speed and payload configuration dependent).
The HUGIN 1000 battery is designed to be air freightable and the vehicle can be delivered with special containers for convenient transportation and mobilization.

The first HUGIN 1000 with HISAS 1030 will be delivered during the spring 2008.

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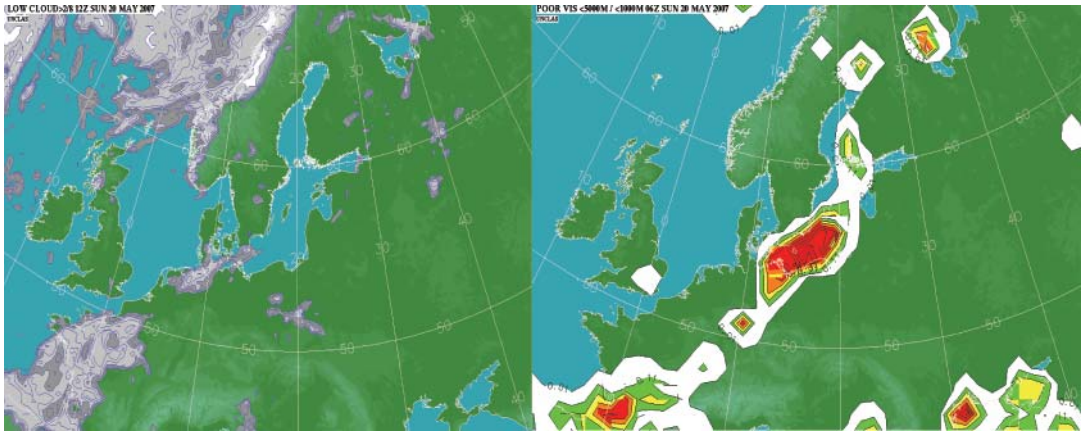
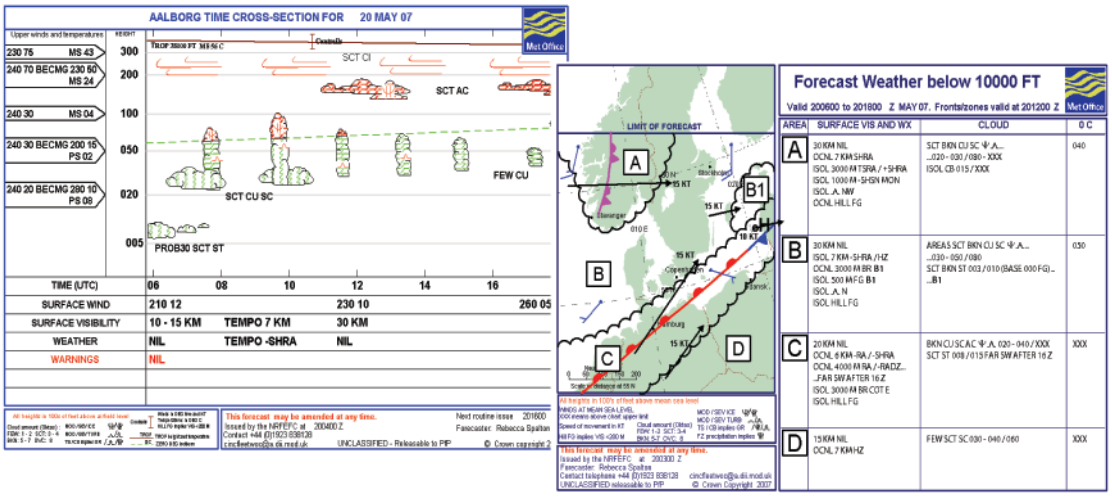
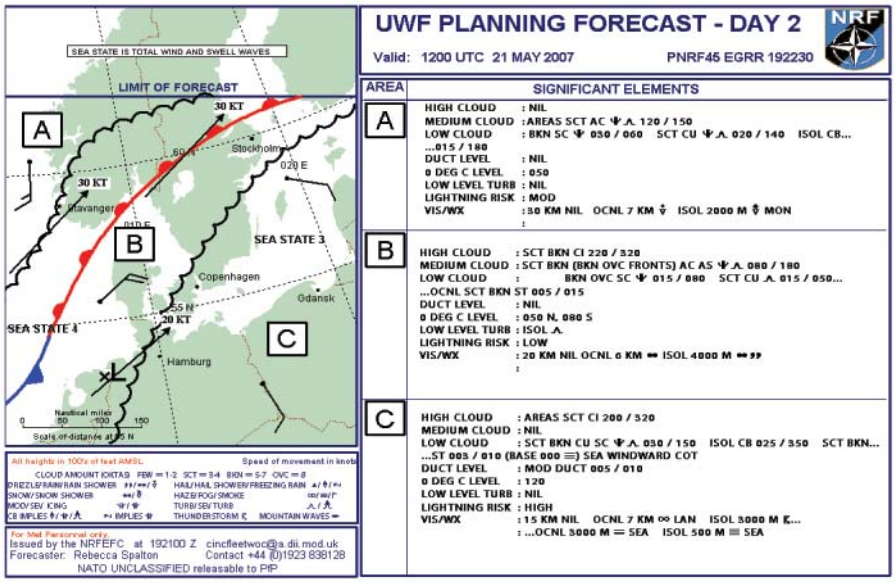
Automated products:



Manual products:



Medium and long term planning graphics:



All the products, both dynamic and static (climatology and REA data) were provided through web delivery using FWOC's well established website with extra pages created for the Ops/Exercises:

The web sites were able to be accessed through FWOC's normal RNEIN site but were also available through web browsers on NATO SWAN and NAMIS.

The activation time scale, in the event of NRF activation, details that the web site and full suite of products would have to be available in 5 days. During a mock activation, FWOC and the UKMO were able to prove that a fully operational site would be available in 2-3 days.

Towards the end of our time as LN to NRF it was decided to hold a demonstration day at Northwood to NATO and PfP Nation METOC specialists to pass on our expertise and our own approach to the LN role, as well as providing lessons identified and commencing the handover to Germany (who will take on the role as LN in Jan 2008). The event was well attended by representatives from 15 different nations, who all had an interest in either taking on the role of LN, seeing what niche capabilities they could provide or what sort of support they might be able to expect from a LN in the delivery of the REP.

During the 18 months that the UK has been LN our support has developed into a very credible and exhaustive product suite which provides deployed forecasters with ample and timely information to allow them to effectively support their particular commands, be they Maritime, Air or Land. We have also introduced the concept that in the future, by outsourcing particular areas of expertise to other nations, a LN would become a coordinator for the provision of the REP and not necessarily the sole provider of products.

First published in Triton

An Armoured Field Survey Company!

In January 1942, a new field survey company was formed at the commandeered Danescourt Private School at West Byfleet. The unit was 97 (Armoured Corps) Field Survey Company, formed to support the newly created armoured corps. It was organised specifically to support very mobile operations, was fully manned but was equipped with the new truck-mounted mobile map reproduction plant rather than tanks! However, it can claim to be one of the shortest lived units as after only three months it was decided that there was no requirement for such a unit and it was converted to become 523 (Corps) Field Survey Company.

A Royal Engineers (Geo) Update from JAGO

By Major Richard Blunt RE, Chief of Staff, JAGO

INTRODUCTION

The Joint Aeronautical and Geospatial Organisation (JAGO) was created from the Geographic Engineer Group (GEG) in June 2006 when No 1 Air Information and Documentation Unit (No1 AIDU) was taken under command. This was one year after the Royal School of Military Survey (RSMS) moved to become part of the Defence College of Intelligence. Despite these organisational changes, Commander JAGO continues to fulfil the role of "Head of Arm" for Royal Engineer (Geo) officers and soldiers and as such much of the staff in the headquarters are focussed on this activity.

This article aims to provide a round up of the development of the RE(Geo) over the past 12 to 24 months as there have been many changes. These changes have been made in response to the current operational environment, developments within the intelligence community and preparing ourselves for the planed move of elements of the Intelligence Collection Group to RAF Wyton which includes JAGO (less No 1 AIDU).

OPERATIONS

JAGO, and more specifically 42 Engineer Regiment (Geo), remain permanently committed to operations. However, the last 12 months of operations has seen a shift in emphasis from large centralised Geographic Support Groups to smaller teams dispersed throughout the command. In essence JAGO has seen the average number of personnel deployed drop by half however, the number and location of Geo teams deployed has doubled. This includes geo support at Battlegroup (Battalion) level; the first time this has happened and demonstrates the value and need of having RE (Geo) personnel alongside HQs at all levels in a dislocated theatre such as Afghanistan. The operating environments in both Afghanistan and Iraq are particularly severe and have put significant pressure on both the human and the systems deployed. As such, the systems must be capable of operating within their own vehicle mounted "box bodies", in hardened office accommodation or under canvas. This flexibility is driving the next generation of deployable systems, but more of that later.

Deployed Office Environment in Hardened Accommodation

Other than direct support to operations in the Middle East, JAGO has deployed personnel to the Falkland Islands to conduct a cadastral survey of the minefields on the islands and also to survey the Sovereign Base Areas on Cyprus. There are other requirements for future survey tasks on the horizon which is good news as this area of work has been relatively quiet over the last five years.

We continue to support Counter Terrorism operations within the UK using the Specialist Support Team as well as personnel committed to the high readiness strategic force groupings. As one can see, 42 Engineer Regiment (Geo) remains highly committed to supporting the wide range of activities both at home and overseas across the full spectrum of Defence.

ORGANISATIONAL CHANGES

JAGO has now completed two years since its formation and there has been a significant shift in focus for elements of HQ JAGO having taken under command No1 AIDU based at RAF Northholt. This structure will remain until the collocation and further reorganisation of the Intelligence Collection Group (ICG) as planning is now underway for the move to Wyton in the 2012 timeframe. This will include the move of 14 Squadron (Geo) back from Germany.

Although outside JAGO, the RSMS have taken under command the IMINT Wing based in Chicksands and undergone restructuring as well, some of it due to changes to the way in which students are managed whilst in a training environment. Soldier output from the school has been increased to meet the ever increasing demand for RE(Geo) trained individuals and the Army Survey Course (ASC) continues to draw officers from the Corps with 93 ASC, which started in Jul 07, having four RE students. The International attendance on the course continues to be varied and healthy in numbers with the current crop of students attending from Singapore, Pakistan and the USA.

GEOGRAPHIC TRADE TRAINING

The Army Survey Course. A study is being undertaken of the ASC along with the advanced education and training sponsored by the National Imagery Exploitation Centre, JARIC, and the Defence Geographic Centre (DGC), to explore how a Geospatial Intelligence (GEOINT) MSc might be introduced. The ASC is already accredited as an MSc in Defence Geographic Information and this study will see an expansion to the existing course rather than a fundamental change.

Deployed Office Environment under Canvas

Ross Kemp opening the Geo Section in Afghanistan

Objective. The principal objective of the new GEOINT Course will be to prepare staff from all three Services and the Civil Service for a career in the provision of GEOINT so that they can provide GEOINT advice, analysis and support in its related disciplines of Imagery Analysis, Geospatial Analysis and Geospatial Information.

Course Structure. It is expected that the GEOINT course will include some common elements but then split into a number of named pathways, possibly Imagery Analysis (IA), Geospatial Analysis (GA) and Geospatial Information (GI), designed to ensure students become both conversant with the whole spectrum of GEOINT requirements for Defence but also become subject matter experts in specific fields within the discipline. RE officers electing to join the RE(Geo) Specialisation will continue to complete the MSc, but other personnel may also complete the whole course or elements of it.

Military Engineer(Geo) Technician Training. Changes have also occurred to the training of soldiers in the last two years. The changes again reflect the current operational environment in which the UK is committed and the continual need to develop our soldiers by giving them recognisable qualifications that reflect their considerable expertise and training:

Class 1 and Class 2 Courses. Merger of the three old trades into a common Military Engineer Geographic Technician CEG is complete. From June 2006 soldiers attending Class 2 courses have completed the new syllabus and from January 2007 HET students have also received bridging modules to enable them to complete the common syllabus at Class 1 level. Work is now underway to develop the objectives and detailed course documentation for a variety of Specialist Qualifications, including career development courses such as the Geo Sergeants and Geo WOs courses. The aim is to have these courses in place by April 2009.

Continuous Professional Development (CPD) for ME Geo Techs. The Review of the RE(Geo) Specialisation included a recommendation that ME Geo Techs should be given the opportunity to progress from a Foundation Science Degree (FDSc) to a BSc Hons by the time they reach Warrant rank. A specific proposal has now been made which will allow progression from the FDSc award to a BSc Hons in Applied Computing (Defence Geographic Information) through a development programme managed jointly by Sheffield Hallam University and RSMS.

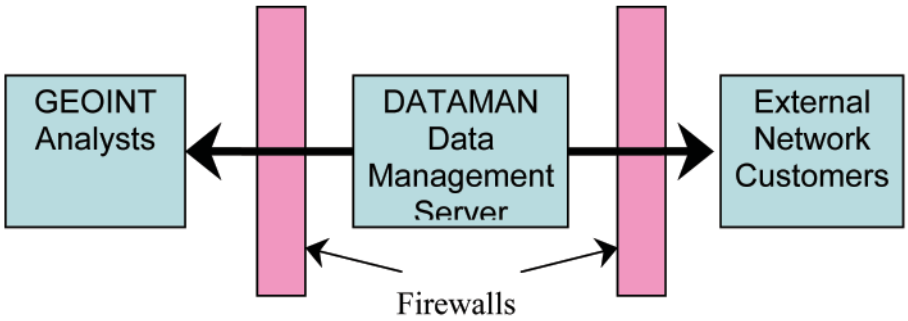
GEOGRAPHIC SUPPORT CAPABILITY DEVELOPMENT

There has been significant development of geo capability within the last 18 months. The "rebranding" of much of the geographic support provided into the term GEOINT has provided the catalyst for a number of capability upgrades and developments. JAGO remains in a strong position by having its own capability development and system support departments that are a mix of highly technical military and civilian staff able to provide direct support to the RE(Geo) community.

In terms of the next generation of geo capability, a programme to modularise our existing systems has been initiated. Known as GeoInt System (GEOSYS) it is aimed primarily at increased flexibility and maximising capability within current resources. However, depending on options taken, it could also enable Image Analysts and Geo Analysts to work off the same GEONET LAN, helping to bridge the exploitation and analysis capability gaps that currently exist.

RE(Geo) personnel are deployed on operations as part of the now fully functional Operational Intelligence Support Groups (OISGs) and as such have been equipped with the new GIAnT system that provides GIS support at high levels of classification. In addition we now have personnel deployed in direct support of Battlegroups (BG) using the in-service DGSL system. This is a new level at which geo support is being provided and is having significant and welcomed impact on BG level operations. The requirement is due to the dislocation specific to the operating environment in Afghanistan but the conundrum to solve is how we deliver this capability across the board without sufficient individuals currently on establishment!

It has long been recognised that there is a need for improved GEOINT data management on deployed systems, and also for a capability to 'serve' foundation data and mission-specific, value-added data onto deployed command and control networks. The project to solve this was called GIDDE 3 and the actual system developed is called DATAMAN. The specialist and technical complexity of geo systems has meant that JAGO possesses the ability and experience to develop this project using its own resources. A significant advantage in that vision to delivery on operations was less than two years and DATAMAN has the ability to serve information to the Geo technician as well as the warfighter in a deployed headquarters.



GEOINT and information dissemination at the field level

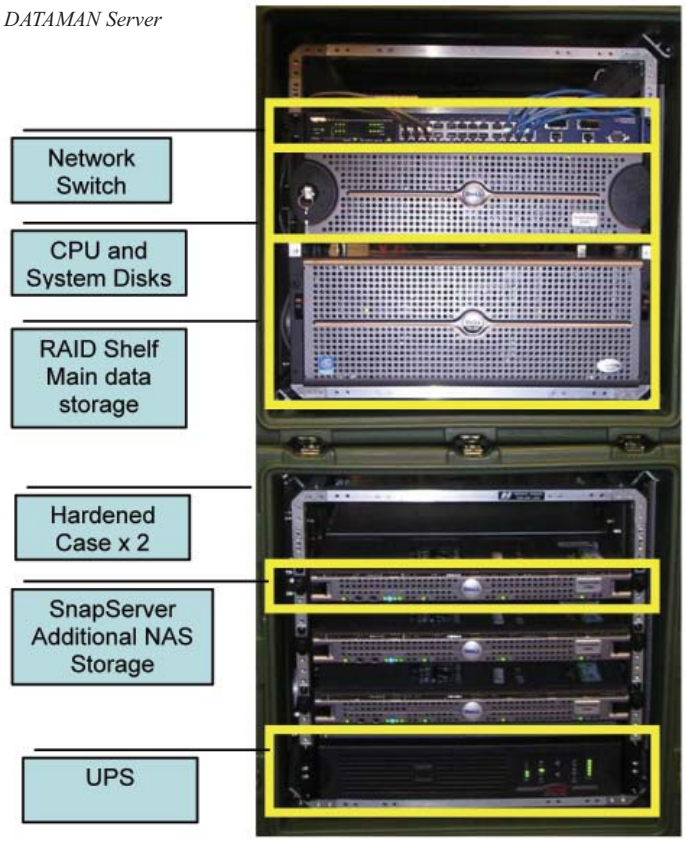
The DATAMAN consists of a COTS Dell Server with RAID and Network Attached Storage, running ESRI software. A number of procedures had to be developed and included:

- Data load procedures
- Metadata Services
- Map and Image Services
- Gazetteer
- Catalogue

JAGO has taken an innovative approach to the delivery of the GEOINT and information to customers and have implemented a system based on the use of Open Geospatial Consortium (OGC) web services. The Data Management Servers are also capable of delivering GEOINT and information using browser-based applications (ESRI ArcIMS) and file download capability direct to the warfighter over command and control networks.

The Data Management Server provides a de-risking opportunity for GEOINT and information support to the Network Enabled Capability (NEC). The key to supporting NEC is the use of 'Open' Standards, which is why the use of the OGC web services specifications and Geographic Mark-up Language (GML) is being prototyped. It will also be essential that 'standard' products are developed for the mission specific, value-added products.

DATAMAN Server



PJHQ and others are using the JAGO systems as a model for all deployed theatre capabilities. The Data Management Server has also been used to provide the main Intelligence Collection Group contribution to the last two CWID exercises where it has successfully delivered the core GEOINT and information to a number of command and control systems using the OGC web services.

The Data Management Servers have proved very successful on deployment both on OP HERRICK and OP TELIC. Their use has measurably improved the management of the data held in theatre. There is now a single authoritative source for all GEOINT and information used in the locations they have been deployed.

Linked to DATAMAN, the Intelligence Collection Group now has a specific reachback capability known as Information Dissemination Service (IDS). It provides an asymmetric, point to point satellite service that allows geospatial and imagery data to be sent from JARIC and JAGO to deployed detachments and replaces the Pilot Digital Broadcast System (PDBS). This has improved the responsiveness of the Geo Support Team based in Hermitage and their ability to manage and update the theatre datasets.

SUMMARY

As one can see, there is much going on within the world of RE(Geo). Current UK military operations around the world and at home are placing significant demands on the RE(Geo) officer and soldier. Keeping pace with the current demands whilst planning for the future is always a difficult balance but the overriding aim is to enable RE(Geo) personnel to provide the continued high level of GEOINT support to operations. The good news is that we are a highly valued capability and the demand for our services is ever increasing - long may that continue.

The Digital Geo System Light DGSL on Operations

The Pilot Digital Broadcast System used on Op TELIC now replaced by IDS

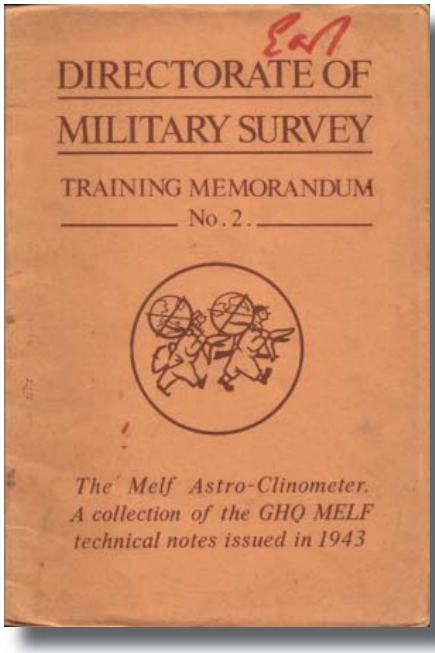
‘Fougasse’ or Fake: Military Survey's Emblem

By Alan Gordon

This article leans heavily on the research carried out by Mike Nolan for which the author is most grateful.

Over the years there has been confusion in the minds of some over the name of Military Survey’s emblem, the cartoon of the soldier with a globe on his shoulder, and who drew the original. Cyril Kennedy Bird (1887-1965), who signed his drawings ‘Fougasse’, is generally presumed to have drawn the graphic for Military Survey during the Second World War with, perhaps, his ‘birth’ being related to the formation of the Directorate of Military Survey in 1941. This is, however, pure speculation as no documented proof of the ‘Fougasse’ connection has yet been unearthed.

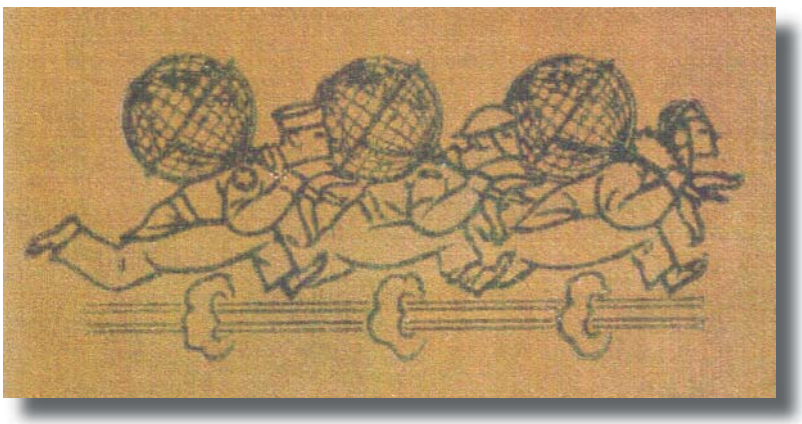
Cyril Bird was an officer in the Royal Engineers during the First World War and was severely injured when blown up by a shell at Gallipolli in 1915. He spent a long period in hospital during which time he submitted cartoons to Punch magazine. He used the name ‘Fougasse’ to avoid confusion with another Punch contributor, W Bird. He chose ‘Fougasse’ as it was a type of French landmine of *“particularly erratic performance”*, it is also the name of a bread made in Province. He became Art Editor of Punch in 1937 and Editor in 1949, retiring from that position in 1953. During the Second World War he produced many drawings for various Ministries, including the famous “Careless talk costs lives” poster. In the early Sixties, Fougasse forged a link with the Hydrographic Department when David Haslam, later to become the Hydrographer of the Navy, arranged for him to illustrate a new guide to beach surveying called ‘Let’s Go Beachcombing’. ‘Fougasse’ died in 1965. At no time during his life does he appear to have had any contact with Military Survey although a number of commercial artists, including for a short period Terence Cuneo, served as cartographers.



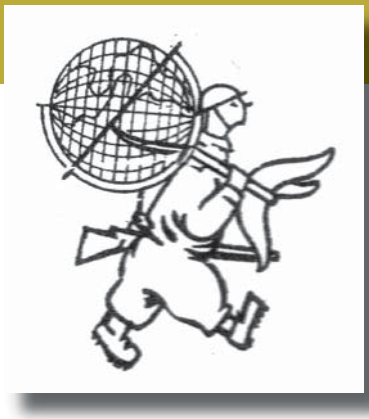
The earliest image yet found.

The device of a soldier with the globe over his shoulder certainly encapsulates the concept of the military surveyor in a few simple lines. The earliest example yet discovered shows a pair of servicemen, a soldier leading an airman, marching from left to right across the front cover of a Directorate of Military Survey Training Memorandum dated 1943. The linework is simpler than on later versions, the globes have no graticule and the soldier’s shows the Americas whilst the airman’s has Africa, Asia and Australia. The fact that there is Army and RAF representation is clearly intended to illustrate Military Survey’s responsibility for not only land maps but also air charts. The cartoon’s appearance on the front cover of an official Directorate publication indicates that it has official sanction as the emblem of the organisation rather than a bit of unofficial light relief.

In 1943 a third figure, this one in American uniform, joined the line-up on the cover of a Supreme Headquarters Allied Expeditionary Force (SHAEF) aeronautical chart catalogue which also included the single character inside. This trio are drawn as though racing across the page this time with the airman in front and the GI at the rear. Whether there is any significance in the order, or the haste shown by the characters, is anybody's guess. However, there is more detail than in the earlier pair and they seem to be unarmed. The GI’s attendance on SHAEF documents continued until 1945 but then he appears to have been ‘demobbed’.



Version including a ‘GI’ as it appeared on a SHAEF document in 1943.



This version appeared on the cover of a 1950 Map and Air Chart Catalogue.

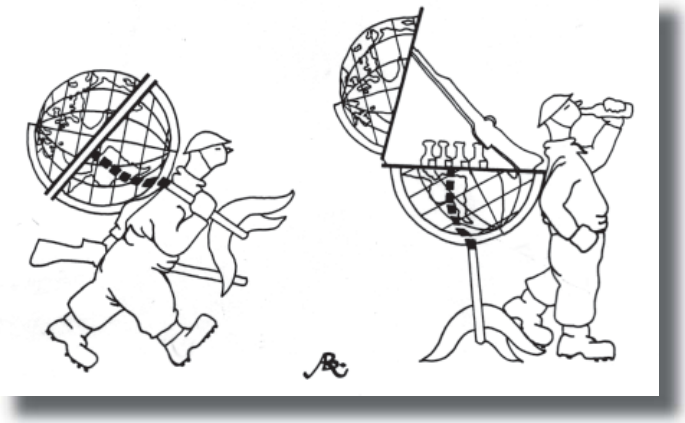
Following the end of the war the airman also seems to have left the service for a while as only the soldier remained on duty as seen on the cover of the 1950 map and air chart catalogue. He then re-enlisted sometime before the end of the Sixties.

In 1970, to highlight the new tri-service nature of Military Survey following the establishment of a post at the Naval Aeronautical Information Centre, a sailor was added to complete the set. The three servicemen became known as 'Tom, Dick and Harry', Dick being the soldier. The cartoon featured on the cover of official Military Survey publications such as Technical Instructions and map catalogues and was used as the unit emblem by 512 STRE as it reflected the tri-service nature of the unit establishment. However, no doubt as a result of one of the endless defence cuts, the trio were 'downsized' several years later to the single soldier who slowly became known as either 'Fred' or 'Fougasse', the latter reflecting the long-held but not proven belief that the original was drawn by Cyril Bird.

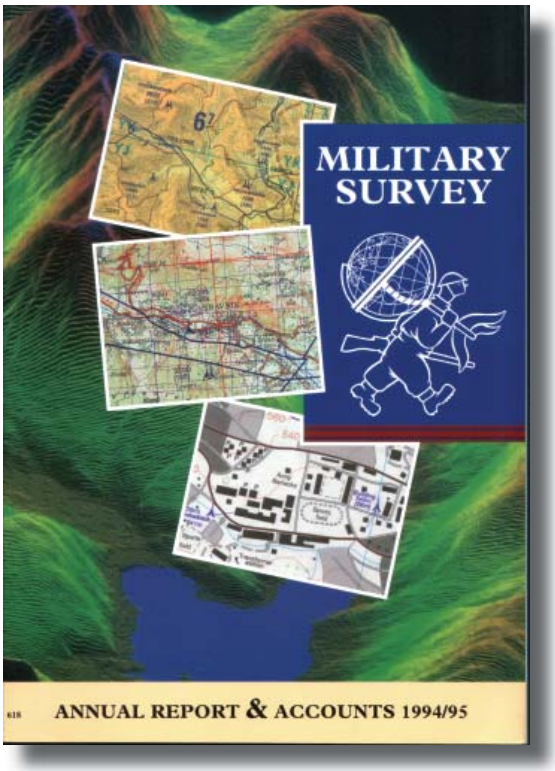
In 1970 a sailor joins the line up to become Tom, Dick and Harry.

Now very much an official crest in gold.

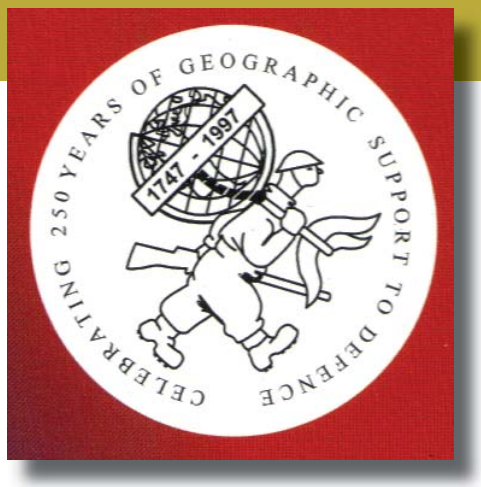
The solitary soldier flourished throughout the Eighties even appearing in gold on the official shield and, in an article in Soldier magazine, the secret of the globe was revealed – it apparently opened up to contain a drinks cabinet! When, in 1991, Military Survey became the Army's first defence support agency this new 'business-like' organisation sought an appropriate logo. Agency staff quickly divided into two camps; one seeking a modern dynamic image whilst the other supported the long-serving cartoon soldier. The traditionalists won the day and this single soldier came into even greater prominence when the Military Survey Defence Agency placed him on the cover of all but three of its annual reports during its nine year existence, an act that got him Parliamentary exposure.



Version that appeared in a Soldier magazine article about 42 Survey Engineer Regiment in 1983.



Gracing the front cover of the Agency report.



The 250th Anniversary logo made use of the broad gimbal.

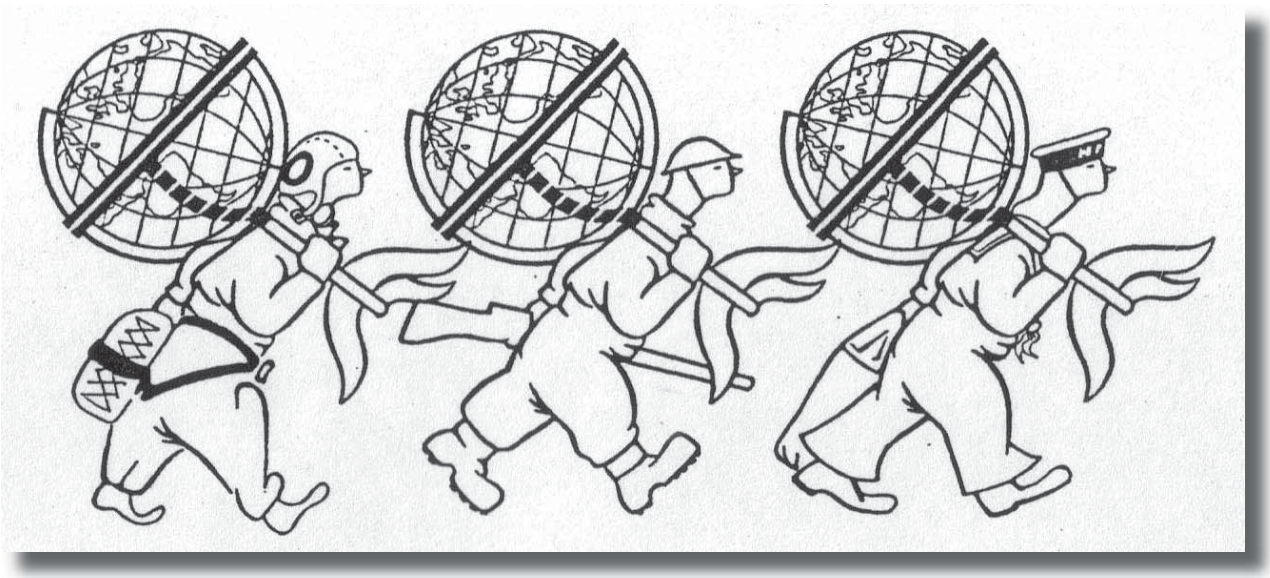
Probably the highlight of Fred's career occurred in 1997 when Military Survey celebrated its 250th anniversary. A special anniversary version of Fred was produced and he appeared on every conceivable item connected to Military Survey during that year including a whole range of artefacts such as mugs, glasses and the label of the anniversary ale that were produced to commemorate the event. That busy year was to be the cartoon soldier's swansong as on the 1st of April 2000 Military Survey joined with JARIC to form the Defence Geographic and Imagery Intelligence Agency and there was no place for a partisan logo and so after probably 59 years service Fred, or Fougasse, retired. But, that was not the end of Fred as, like all good military surveyors, following retirement he joined the Military Survey Branch of the Royal Engineers Association and now has pride of place on the Branch Standard and newsletter banner.

The Military Survey (Geo) Branch standard.

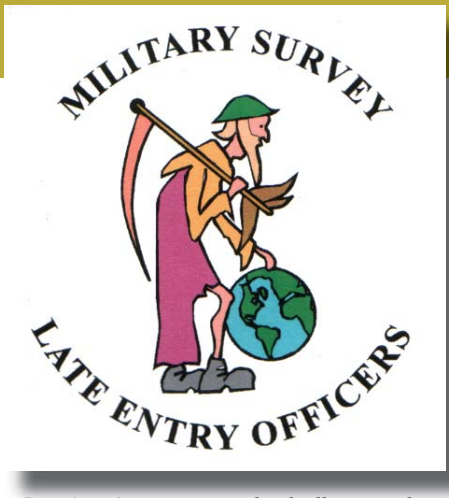
It is apparent that the cartoon has been redrawn countless times, most versions having subtle differences such as the land mass shown on the globe and the size and style of the gimbal on the globe. The quality of linework also varied but the style has remained constant as has the direction, with one notable exception, that the figure faces. The exception is the image used by the Washington-based 512 Specialist Team RE which faced to the left. The only explanation must be that he was heading back home across the Atlantic!

Facing left on a brass coaster. The US influence?

There were several attempts to update the original soldier, a change from Second World War 'tin hat' to Cold War 'steel helmet' survived whilst replacing the Lee Enfield .303 with an SLR didn't appear to find favour. Also, at some stage the airman's helmet was updated and his parachute given some lacing. Versions of the threesome appeared in the MCE in-house journal with the faces of well-known Feltham characters replacing the cartoon faces.



An example of the variations over the years – compare to the similar cartoon on page 49.



Bert Axten's version very clearly illustrates the ravages of time experienced by LE officers.

As well as serving the REA, the cartoon character still has two other roles. Bert Axten produced an 'aged' version as the all-too appropriate logo of the Military Survey Late Entry Officers annual dinner night where he stars on the cover of the menu card, and the Sergeant's Mess at Hermitage commissioned a fine statuette of 'Fred' as its presentation item to members leaving the service.

The WOs and Sergeants' Mess presentation piece.

So what is the true story of the birth of the soldier with the world on his shoulder? Mike Nolan's research has so far failed to unearth exact details of Fred's origin but several options are possible.

Firstly, was Fougasse, who at the time was employed by the government as a cartoonist, commissioned to create an appropriate emblem for the newly formed Directorate of Military Survey? So far no record to prove this has been unearthed. Alternatively, the figure may have appeared in a Fougasse cartoon and simply been adopted, officially or otherwise, for use by Military Survey. However, Mike leafed through every single wartime issue of Punch held in the Bodleian Library searching for a cartoon of a soldier with a globe on his shoulder but found nothing. Finally, given the prodigious output of Fougasse during the war particularly as posters that were seen everywhere, did a talented military cartographer simply draw the cartoon in the Fougasse style which was, after all, very popular at the time. Close comparison of proven Fougasse cartoon characters and the earliest versions of the Military Survey men are inconclusive, they are obviously in the style of the time but not that close a match prove that Cyril Bird drew them personally.

Whilst all avenues of research are by no means exhausted yet, the conclusion at this stage is that Cyril Bird just might have drawn the original cartoon character but there is no provenance to support the claim. It is more likely that an unknown draughtsman drew it in the style of the day. Finally, whoever came up with the idea of the soldier purposefully marching forward with the globe in one hand and a rifle in the other encapsulated perfectly in a single image the embodiment of the military surveyor and, whatever his ancestry, the little cartoon figure has been synonymous with Military Survey for more than 60 years.

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The Royal Engineers Museum is like no other military museum you might have visited. It houses objects highlighting the enormous range of achievements of the Royal Engineers over the centuries from the creation of the Ordnance Survey to the beginnings of flying, from the designing of the Albert Hall to the dangerous on-going task of bomb disposal.

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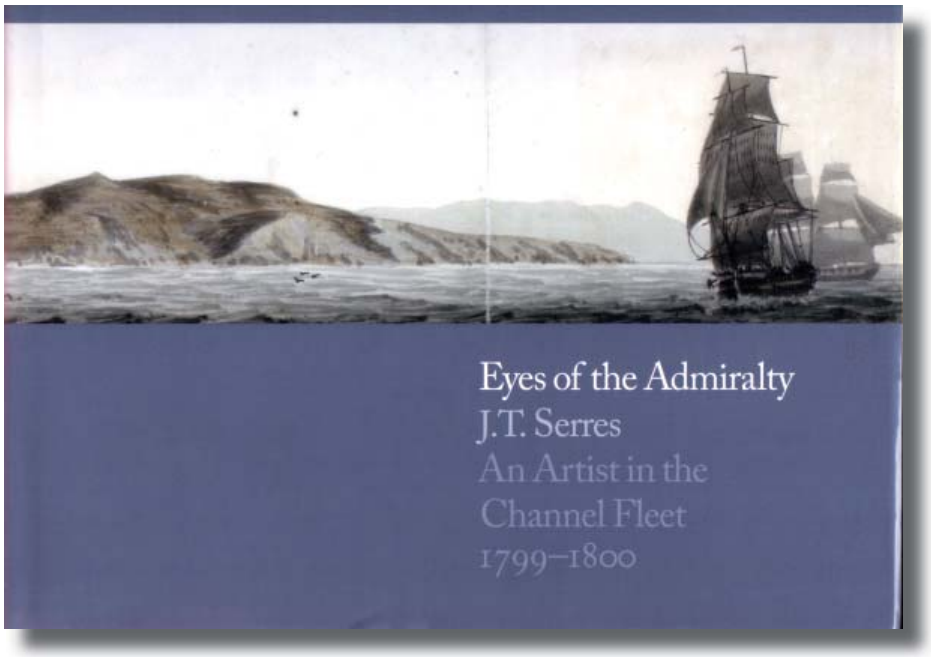
DSA Member's New Book

The 29th of May saw the publication of DSA member Mike Barritt's book 'Eyes of the Admiralty'. This superb new volume tells the story of the well-known artist JT Serres, who was commissioned by the Admiralty to sail with the inshore frigate squadron blockading Brest during the Napoleonic Wars to record the French shoreline to assist with navigation. The results are timeless masterpieces of maritime art. A full review of the book will appear in the winter issue of Ranger.

The book is published by the National Maritime Museum and is priced at just £20.



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Geospatial Support in NATO
SHAPE J2 Geo Operations and Policy

By Lieutenant Colonel Soenke Fischhoefer
SHAPE J2 Geo Operations and Policy

This short article intends to provide an overview of how geospatial support has developed during the 21st century within NATO.

INTRODUCTION

The Cold War

During the time of the Cold War, geospatial support was predominantly focussed on the supply of maps and geospatial information such as trigonometric points to NATO HQs and troops in a potential theatre of operation. This was mainly expected to be West Germany. This geospatial information was largely supplied by the host nation, Germany. Essentially for political reasons, the Allies mapped the eastern part of Germany with the British mapping the former German Democratic Republic with Cross Country Movement Maps and the like.

The 1990's

After the fall of the Berlin Wall, most military organisations remained for quite sometime in the organisational structure of the Cold War scenario. This changed during the operations in Bosnia-Herzegovina and even more during the Kosovo Campaign in 1999. Operational aspects different from those planned for decades started to take place.

The 21st Century

9/11 stands as the deepest hostile impact not only in US history but also in the history of NATO. This was the first time that an Article 5 case was declared (Editors note: Article 5 states that an attack on one member is an attack on all members) – one of the members of the Alliance was attacked and the others were asked to support the defence efforts of that nation. Whoever would have thought that this would be the United States of America? During the following years and until the present day, NATO has changed tremendously.

THE CURRENT STRUCTURE

Approximately 10 years ago NATO still had about 23,000 members within the NATO Command Structure and about 40 Headquarters, mainly in Europe. Out of these today, far less than half are left and further adjustments are expected in the near future.

The Political Level

The Political Level is a complex civil-military organisational structure with the NATO Secretary General and the International Military Staff (IMS) in Brussels. They organize and host the frequent meetings in NATO HQ in Brussels. The IMS prepares the Military Committee (MC) documents that are discussed and approved by the NATO nations. The Geospatial Officer in the IMS is supported by the NATO Command Structure.

From the geospatial aspect, the most important MC documents published in the last two years were the MC296/1 – Geospatial Policy in NATO (February 2006) - which deals with the coordination of geospatial support between NATO Nations after the end of the Cold War in general and the Geospatial Information Supporting Nation Concept (MC 545; April 2007) which deals with the support of NATO expeditionary operations of the NATO Response Force (NRF).

The NATO Command Structure (NCS)

Below the political level in Brussels lies the military structure, the so-called 'NATO Command Structure (NCS)'. In total, the NCS consists of approximately 9,000 personnel of which roughly 50 are Geo personnel. Essentially, the military structure is divided into two major components:

ALLIED COMMAND OPERATIONS (ACO): ACO is the part of NCS that deals with all operational aspects. The Strategic HQ SHAPE is near Mons in the southern part of Belgium. Approximately 1.5 million soldiers are under this command.

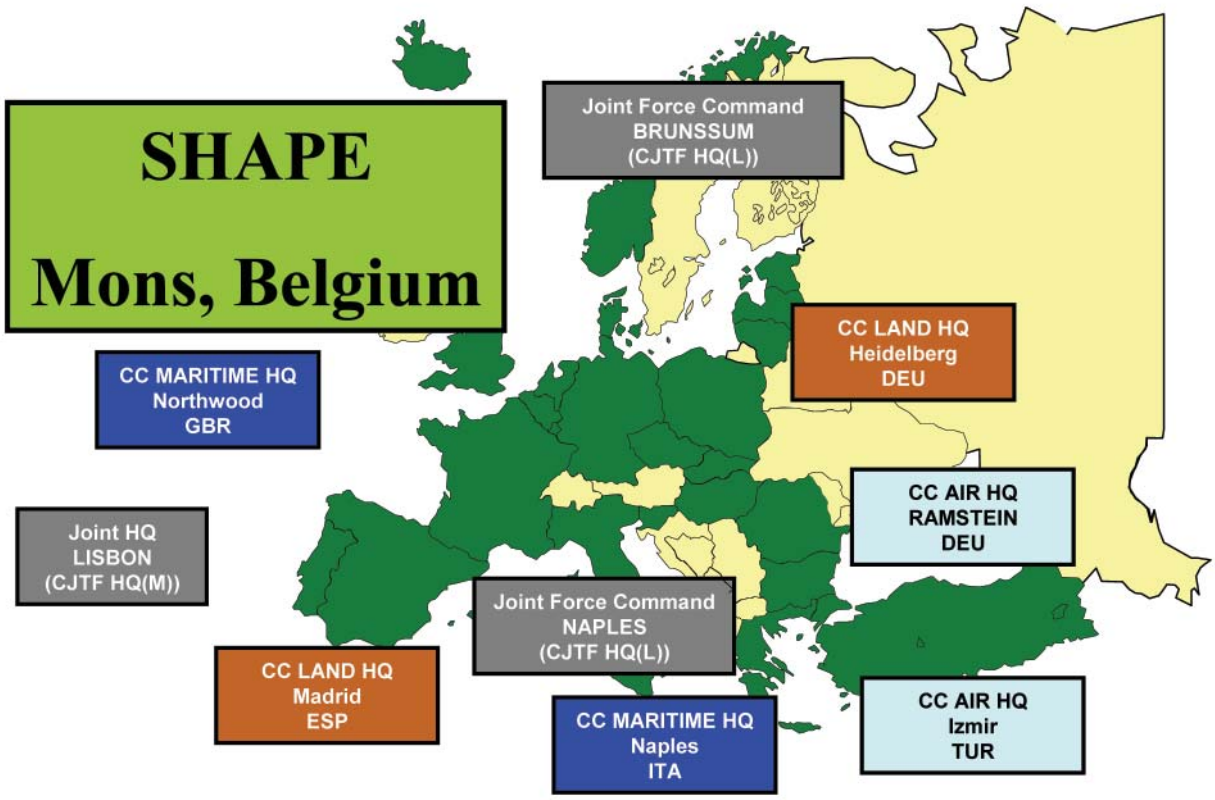
ALLIED COMMAND TRANSFORMATIONS (ACT): This part of the NCS deals with the transformation of the organisation, for instance, how NATO should look in 20 years time. This includes organisational aspects as well as capability development, education and training.

Both Commands work closely together, their common guidelines are the Bi-Strategic Commands Directives (Bi-SC-directives), an example would be the Bi-Sc-Geospatial Directive (currently in Draft).

ALLIED COMMAND OPERATIONS (ACO)

SHAPE - Supreme Headquarters Allied Powers Europe

For traditional reason the name remains in place as the highest level of military planning – or the 'strategic level'. The planning horizon is about 150 days ahead of the current situation. Concerning geospatial support, SHAPE organises the fundamental agreements with the NATO Nations, these include specific agreements like the Memorandum of Understanding (MOU) between the US National Geospatial Intelligence Agency and SHAPE. SHAPE's responsibilities also include the planning of strategic level elements of current and future operations. This includes potential operations for expeditionary forces like the NATO Response Force (NRF). NATO's level of ambition in general terms is to efficiently run two major and six smaller operations simultaneously.



Organizational Structure ACO

Joint Force Command Level (JFC)/Joint Command (JC) Level

The JFC is the level at which the Operational NATO HQs are found. There are two NATO Joint Force Commands, one in Brunssum (southern Netherlands, near Maastricht) and one in Naples (Italy). They are in charge of running current operations like ISAF (Afghanistan, JFC Brunssum) and the Balkans Theatre (EUFOR and KFOR) and Operation Active Endeavour in the Mediterranean (JFC Naples).

Additionally NATO has a Joint Command in Lisbon which is slightly smaller and focuses mainly on additional ad-hoc operations like the humanitarian aid in Pakistan in autumn 2005 after the disastrous earthquake at the border between Pakistan and India.

The responsibility for the NRF is rotated on an annual basis between the above mentioned three commands.

Below the Joint level the two Joint Force Commands still have traditional single service headquarters known as Component Commands (CC):

Attached to JFC Brunssum

CC Land: Heidelberg (Germany)

CC Air: Ramstein (Germany)

CC Maritime: Northwood (Great Britain)

Subordinate to JFC Naples we find

CC Land: Madrid (Spain)

CC Air: Izmir (Turkey)

CC Maritime: Naples (Italy)

ALLIED COMMAND TRANSFORMATION (ACT)

The former SACLANT HQ (Norfolk, Virginia, USA) was mainly responsible for the transport of troops from the USA to Europe. Today this is known as ALLIED COMMAND TRANSFORMATION (ACT) and is responsible for the transformation of NATO to meet the needs of future operations, including all long-term capability developments and training aspects.

Basic concepts beyond the horizon of the next 3 years are developed in Norfolk Virginia in USA. ACT is also in charge to fund the development of long-term capabilities such as CORE GIS (more later).

Other organisations in NATO that belong to ACT are:

- Joint Warfare Centre (JWC) in Stavanger, Norway – in charge of training troops being deployed into theatre
- Joint Lessons Learnt Centre (JALLC) in Portugal
- NATO (Undersea) Research Centre in La Spezia in Italy.

OTHER ORGANISATIONS

Other Organisations that are currently not directly part of the NATO Command Structure but are closely co-operating with the geospatial community are:

NATO Communication Support Agency (NCSA)

NCSA is the organisation responsible for maintaining NATO's Command and Control systems. This is a total support capability that includes hardware, software and training. The NATO school in Latina, Italy which focuses on technical training such as data-management and Geographic Information Systems is also part of this organisation.

NATO Command Control And Consultation Agency (NC3A)

This is a technical agency which develops capabilities mainly in the communication sector but includes a strong group that provides not only technical solutions but also geospatial support into NATO HQs in theatres. The geospatial support ranges from providing imagery from commercial sources, via developing software solutions to maintaining the web pages of the Geo cells in the operational theatres in the Balkans and Afghanistan. The most popular development is a situational awareness tool which is called iGeoSIT – interim Geospatial Situational Awareness Tool (more later).

The Geo Cell in NC3A is not only the think tank for the geospatial community in NATO but also the driving force for developing and implementing new NATO-owned capabilities such as the CORE GIS, iGeoSIT, the Joint Common Operational Picture and Recognized Environmental Picture applications which merge available environmental data such as maritime information, geospatial and meteorological data. This is done in close co-operation with ACO and ACT. Since ACT is responsible for long term capability development they control most of the funding for these developments.

Intelligence Fusion Centre (IFC)

This organisation is maintained by the US and Great Britain as framework nations/host nation and could be described as the NATO ISTAR battalion and includes a Geo/IMINT Cell. Originally this organisation was meant to support NATO with monitoring events outside operational theatres however, the last year has shown that this asset is highly valuable in supporting ongoing operations especially ISAF. IFC might become part of the NATO Command Structure in the future.

WHERE CAN WE FIND GEOSPATIAL SUPPORT – WHAT ARE THE TASKS OF TODAY?

The total number of Geo personnel in NATO is approximately 70 of which 50 are military belonging to the 'core NATO' - the NATO Command Structure. The geospatial support consists of two parts:

Maintaining contact with the nations:

This is the role of 'Operations and Policy'. The nations are the main providers of geospatial information and therefore from the perspective of the geo community they are the key enablers. The Geo staff is only in place to coordinate the requirements and the geospatial support of operations. NATO coordinates the framework for the Nations.

Geospatial Support:

Geospatial Support Cells exist in peacetime establishments such as SHAPE, JFC Brunssum and CC Land Heidelberg and support all staff activities.

Additionally there are Crisis Establishments (CE) – NATO HQs in theatres like ISAF and KFOR. The CEs are the link into operations.

Furthermore there may be Geo units under NATO which are also manned by the nations. This could be a Theatre Map Depot in ISAF with 4 soldiers or a complete Geospatial Support Company with 48 soldiers for a deployed NRF with approximately 25,000 troops. This is similar to a traditional Topographic Squadron.

THE WAY AHEAD

Though the traditional analogue map will continue to be the most popular product for troops, the digital revolution is changing the geospatial business in NATO. Geographic Information Systems, bespoke products and geo products like 'Google Earth' and 'Tom-Tom' have challenged the community in NATO as they do our national counterparts.

Upcoming structural challenges are the cooperation and possible convergence with the IMINT community – the data flow and provision of imagery is equally a burden and a joy.

However, traditional geospatial tasks still exist. We, as a Geo-Community, were proud of precise information and this will remain so. We are challenged now on a worldwide scale whereas in the past we were focusing on much smaller areas.

Where are we going and what are we heading for? Good questions! NATO in general will become more and more professional and, hopefully, less of a burden for the taxpayer. NATO's commitments are more significant than ever though this remains a constant challenge with the shrinking amount of personnel available in the NATO Command Structure and for NATO assigned troops. The Geo challenge remains.

CURRENT DEVELOPMENTS

CORE GIS

Basically this is a 'cartographic workshop plus a 'strategic database' which allows the geospatial community to provide geospatial information to all parts of the NATO Command Structure and all functional services via web services. Due to copyright and release restrictions, NATO cannot give this database directly to each nation or Force assigned to NATO. This is generally decided on a case-by-case basis or under transfer of authority when e.g. the ARRC deploys under NATO's command. CORE GIS should become the backbone on which many other systems throughout NATO will sit, providing a common and consistent view of the geospatial aspects for a given area of concern.

iGeoSIT – Interim Geospatial Situational Awareness Tool

This current situational awareness tool allows the higher echelons to have information in close to real time from theatres. This is a highly distributed web-based service. Geo supports the system with geospatial 'background information' whereas the user is responsible for maintaining the dynamic aspects of the data in the systems e.g. the mine information is maintained by the Engineers and the list of hospitals by the medical services. SHAPE and JFC/JC level can have immediately the same information as the commander in the field. This system is run on NATO or mission secret networks. iGeosit is one of the chosen viewer functionalities for the Joint Common Operational Picture (JCOP) which is currently under development.

The Recognized Environmental Picture (REP)

The REP is a concept where all environmental information contributes in a seamless manner to the Joint Common Operational Picture (JCOP, later NCOP – NATO Common Operational Picture). This makes close cooperation between the METOC community and the Geospatial Community absolutely essential.

Imagery Management Group (IMG) – Geo and IMAGERY/IMINT Convergence

More and more cooperation between the IMINT community and Geo is happening under the modern asymmetric threats we face, therefore it is the intent of the International Military Staff to have closer cooperation between these two groups. Details of a convergence are currently being discussed in the Imagery Management Group.

Other activities that could influence the 'Geo-Business' might be the introduction of NATO-owned reconnaissance assets like the Allied Ground Surveillance (AGS) and 'Full Motion Video', both air-based assets (aircraft/UAV). These two assets are currently in the procurement phase.

The aim of the REP and Geo-Imagery/IMINT convergence is to support all activities leading to Network Centric Warfare and the provision of information superiority via the NATO Network Enabled Capability.

CONCLUSION

Geospatial support is more embedded in the NATO Command Structure than ever before. The 'digitalisation of the battlespace' influences and drives our day to day business but still the war fighter on the ground relies heavily on traditional printed maps - approximately 500,000 maps are distributed each year in a theatre like ISAF, showing clearly that the 'analogue' map will no doubt be the mainstay for many years to come.

Whatever re-organisation takes place, as long as there are deployed forces fighting on the ground, they will be interested in the terrain and geospatial support.

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1939-45 Artillery Survey … and all that

By Massimo Mangilli-Climpson

In the winter 2007 edition of this magazine P.W.E Taylor undertook a review of my book *Larkhill's Wartime Locators*. Firstly, I would stress that book reviewing is a most thankless task; it is a credible skill, particularly when a mammoth-size tome is under scrutiny in an extremely small, condensed space.

I very much appreciated Mr Taylor's substantial opening paragraph which is positive and I thank him for his final comment "To the historical researcher the qualities of anecdotal material will be familiar and will not detract from the sterling value of this book. To the ordinary reader these qualities will serve to enliven the text." However, he is also highly critical of the book, indicating that he was unhappy with the analysis and the scrutiny of the sources used. I would like use this opportunity to respond to Mr Taylor's review, and perhaps open a debate about this subject to a wider audience.

I will only reply to one of the two criticisms which dealt with two pages (pp.344-45) on Lt Col Hilary Clegg of 7th Survey. The reviewer intimates that I spent too long describing the foibles of this and other officers without stressing, as he claims, that that Lt Col Clegg was the most competent CO in artillery survey. My sources, Clegg's officers, NCOs and gunners, constantly repeated – and I chose to include a sample in the narrative - that despite his eccentricities, and his brilliant scientific mind, Clegg was a good leader of men, and knew when to act the fool and when to fool fools. Comments about his eccentricity were not something derogatory as the reviewer implies; they amounted to inserting aspects of the CO's idiosyncratic characteristics into the whole, and once Clegg (or affectionately "Clogg" as he was known) was understood they became his own personal, tolerated features, making him more humanely accepted and liked by all his subordinates. When going over to Normandy and anxiety was tense, Clegg in turn turned his foibles to his advantage, laughing with his men at himself. Is this derogatory, or offensive? The men who lived and worked with him did not think so.

But not all the COs, as the reviewer himself might recognise, were like Hilary Clegg. Another who the reviewer never met was the fair-minded, quiet-spoken, southern Irishman by birth, Derrick Hall-Dare of the pre-war Bristol based 3rd TA, who as a regular was recognised as able to cement the necessary trust among TA persons in the Italian campaign, and to become the successful proven link in the immediate post-war as commander of the TA 377 Observation Regiment, the successor to the TA 4th Survey at Gateshead. Many more COs were less extraordinary individuals, although nevertheless effective commanders. None of the COs can be described as "clowns" in charge of a "clutch of private armies" as the reviewer inaccurately states I presented them.

I must finally thank the reviewer for undertaking this tiresome task, of quickly writing personal impressions about my book - several of which, however, I cannot accept either in part or in whole. However bad or good the comments may sound, I am still grateful; now others may visit their libraries, become acquainted themselves with the work, the author, and the veterans who were prepared to be subjected to my own interrogation about their own lives – something which even their families remained in the dark for years. Readers will embark on their own journeys of discovery, to find aspects of the story which they will be most unaware of and will give them moments of pleasure, and which perhaps brevity of time did not permit the reviewer to concentrate more freely. Though he has been critical, I am certain that Mr Taylor's observations will open a debate, allowing *Larkhill's Wartime Locators*, as Peter Chasseaud's *Artillery Astrologers* previously, to be treated as a survey marker along the road of survey history, which has still sixty more years to be mapped before other unrecorded episodes can be readily travelled upon and discussed.

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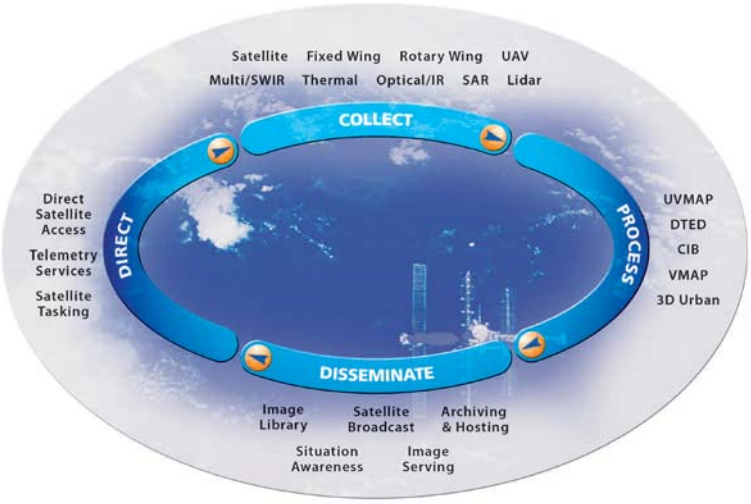

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CHRISTOPHER NOEL THOMPSON

Christopher Noel Thompson was born at Abbottabad in India on Christmas Day 1932, the son of Brigadier Gordon Thompson, 5th Gurkha Rifles. His early years were spent in India before he was sent to England for his education at Eagle House and Wellington College. He was commissioned from the Royal Military Academy, Sandhurst, into the Royal Engineers, and later graduated from Sidney Sussex College, Cambridge, with a BA in Mechanical Sciences.

His early career was in Bomb Disposal, mostly on the south coast, and he remained in affectionate contact with the Bomb Disposal community for the rest of his life. It was during this time that he was responsible for defusing an unexploded bomb, ironically on the route of a "Ban-the-Bomb" peace march to Aldermaston, which had to be diverted – legend has it that he was in no hurry.

By 1962 he had set his sights on a career in the Survey wing of the Royal Engineers and, after qualifying, he was posted to Aden as second in command of a squadron there. It was a time of increasing violence as the Protectorate sought its independence from Britain, but Aden was also where he met his future wife, Margaret, and where they were married in 1964. It was the start of a long and happy life together.

His next posting was as an exchange officer to Canada, where he spent 3 years, before returning to London for a year to further his education, in photogrammetry, at University College London. This science was to be of increasing importance to both his own career, and to British defence in general, as increasing use came to be made of imagery acquired from space both for intelligence and for mapping. After a squadron command and staff appointments in the UK, he was posted to the USA for 2 successive appointments in Washington, as a Major and then Lieutenant Colonel, where he started to make a significant contribution to the defence effort of both countries. He saw quickly the way the technology was going and ensured that Britain played an increasing part in exploiting it, at the same time catching the eye of his military superiors and his American colleagues. Some of the friendships made then were to last for the rest of his life.

He returned to England to command 42 Survey Engineer Regiment, before being promoted to Colonel and to an appointment with the Ordnance Survey as Deputy Director. From its inception in the 18th century, the Ordnance Survey had been led and largely officered by Royal Engineer officers, something that had been diminishing through the post war years and was to end in 1982, coinciding with the completion of his own tour of duty there.

He was promoted to Brigadier on the staff at the Military Survey headquarters at Feltham, and in due course to the most senior position open to him, Director of Military Survey, in 1983. This was a critical time as lessons were absorbed from the Falklands war and as new digital technology started to be developed for space imagery, and General Thompson's technical expertise, sharp intelligence, and experience admirably equipped him for this vital task. This was recognised with the award of the CB on his retirement from this position in 1987.

Chris Thompson was a member of the UK OEEPE Committee from its inception in 1981, until 1992. Almost immediately from the start of the UK membership of OEEPE, he was appointed as President of Commission D, Photogrammetry and Cartography, and he continued in this position until 1992.

After completing his military career he was retained as a consultant with Geonex, an American company considering buying into the UK market. J.A. Story was subsequently acquired by them and Chris Thompson became its first Managing Director, retiring from this appointment in 1992 but retaining a consultancy role. He and Margaret moved to rural Cumbria where they became

much involved in local matters. Theirs was a notably successful marriage, and they were warm and generous hosts to their many friends, as indeed they had been throughout their over 40 years together. Chris's conversion to the Catholic faith of his wife was a source of strength to them both, especially during his last weeks.

Chris served on many professionally related Councils and Committees, including that of the Royal Geographical Society, and for 5 years as a Colonel Commandant in the Royal Engineers.

His wife, Margaret, nee Longworth, survives him, as do his son, Hugh, and twin daughters, Ruth and Clare.

Patrick Fagan

Colonel Wilfred (Freddie) Hore TD, DL, MA, BSc, FRGS

An officer who combined military survey, geography, teaching and public duties into a very caring life.

Colonel Freddie Hore, who died on the 5th of February, had outstanding careers in Military Survey and Education which for a great part of his life overlapped by way of geography, surveying and teaching.

His early education was at Torquay Grammar School followed by 3 years at University College of the South West at Exeter. Freddie read Geography at Selwyn College Cambridge through an open exhibition and progressed to a Post Graduate Certificate in Education. During this time he joined the Cambridge University OTC and was commissioned in November 1940.

He then joined the forces and served with the 14 Corps Field Survey Company before postings to 1 and later, 4 Air Survey Liaison Sections RE, both of which he commanded. In the former unit he was closely involved with the preparations for D-Day.

Post war he took up his career in education and progressed from being a teacher at Plympton Grammar School to Senior Geography Master at Portsmouth Grammar School. During this period he became involved with the CCF and inevitably progressed to Military Survey as OC of 338 Cartographic Squadron RE (TA) which was followed by appointment as CO of 135 Survey Engineer Regiment RE (TA). He held this command from 1951 to 56.

At this time he was appointed Head Master of BEC (Grammar) School Tooting and progressed to be appointed Head of the Royal Grammar School, Guildford (1966-75). Never one to be idle, during this period he was awarded the Territorial Decoration, appointed a Deputy Lieutenant of the County of Surrey and was granted Honorary Colonel appointments to 135 Field Survey Squadron RE, the 5th Cadet Battalion Surrey ACF and The Royal Grammar School Guildford CCF. Furthermore he was promoted to the honorary rank of Colonel.

It was during his period as Honorary Colonel to 135 Field Survey Squadron RE that he campaigned successfully to the MOD and the London TA Association against the establishment cuts planned for the Squadron.

Freddie is survived by his wife Pat and many, many friends, colleagues and comrades.

Ian Russell, Ken Joels

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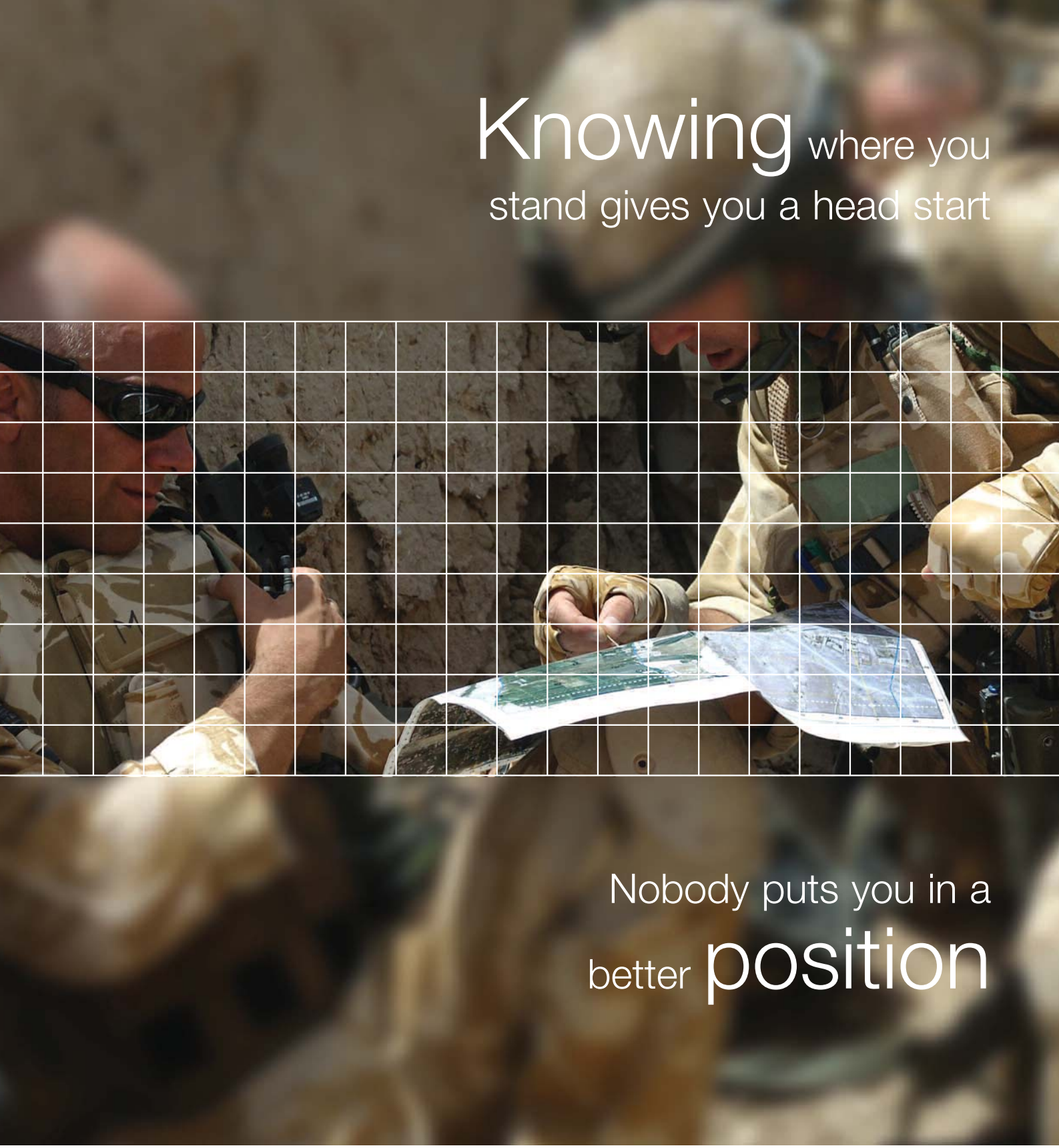

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