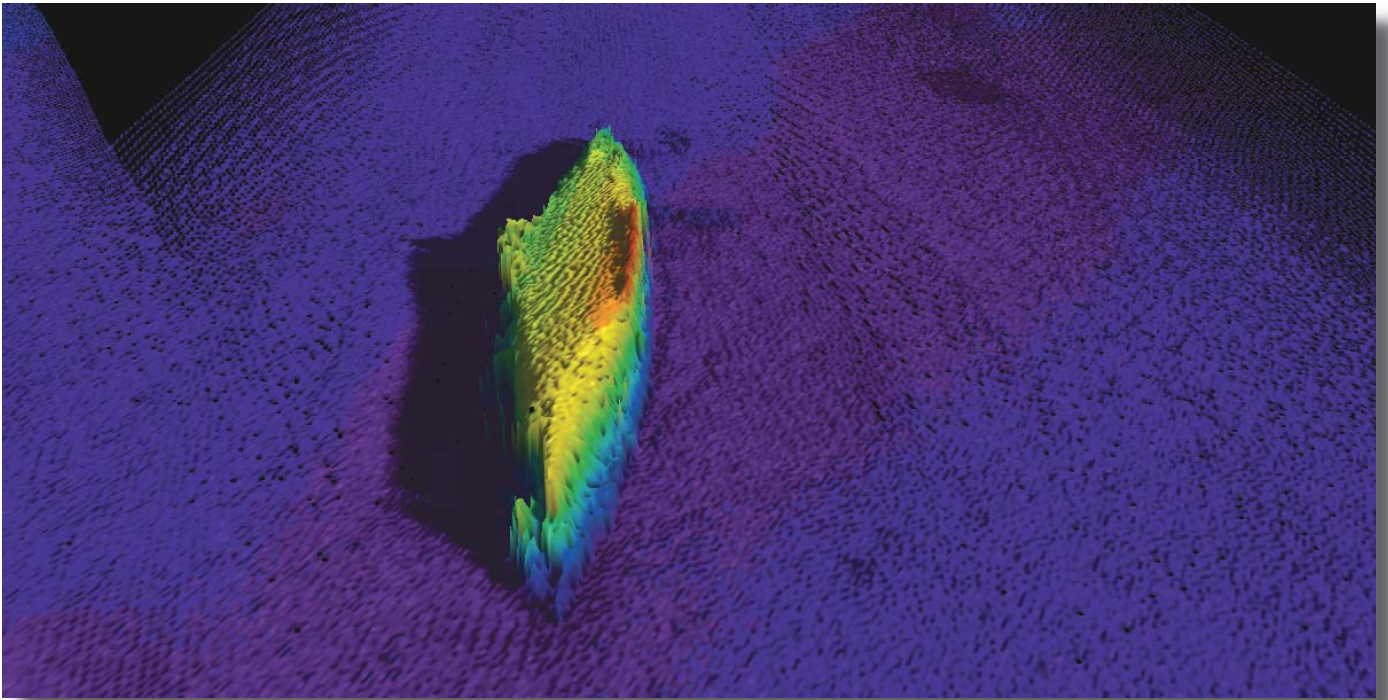


# THE RANGER

*Journal of the Defence Surveyors' Association*  
Winter 2004

Volume 2 Number 10



*Imagery produced from Kongsberg Maritime's Multibeam Echo Sounder data showing HMS Prince of Wales lying on the seabed off the coast of Malaysia.*

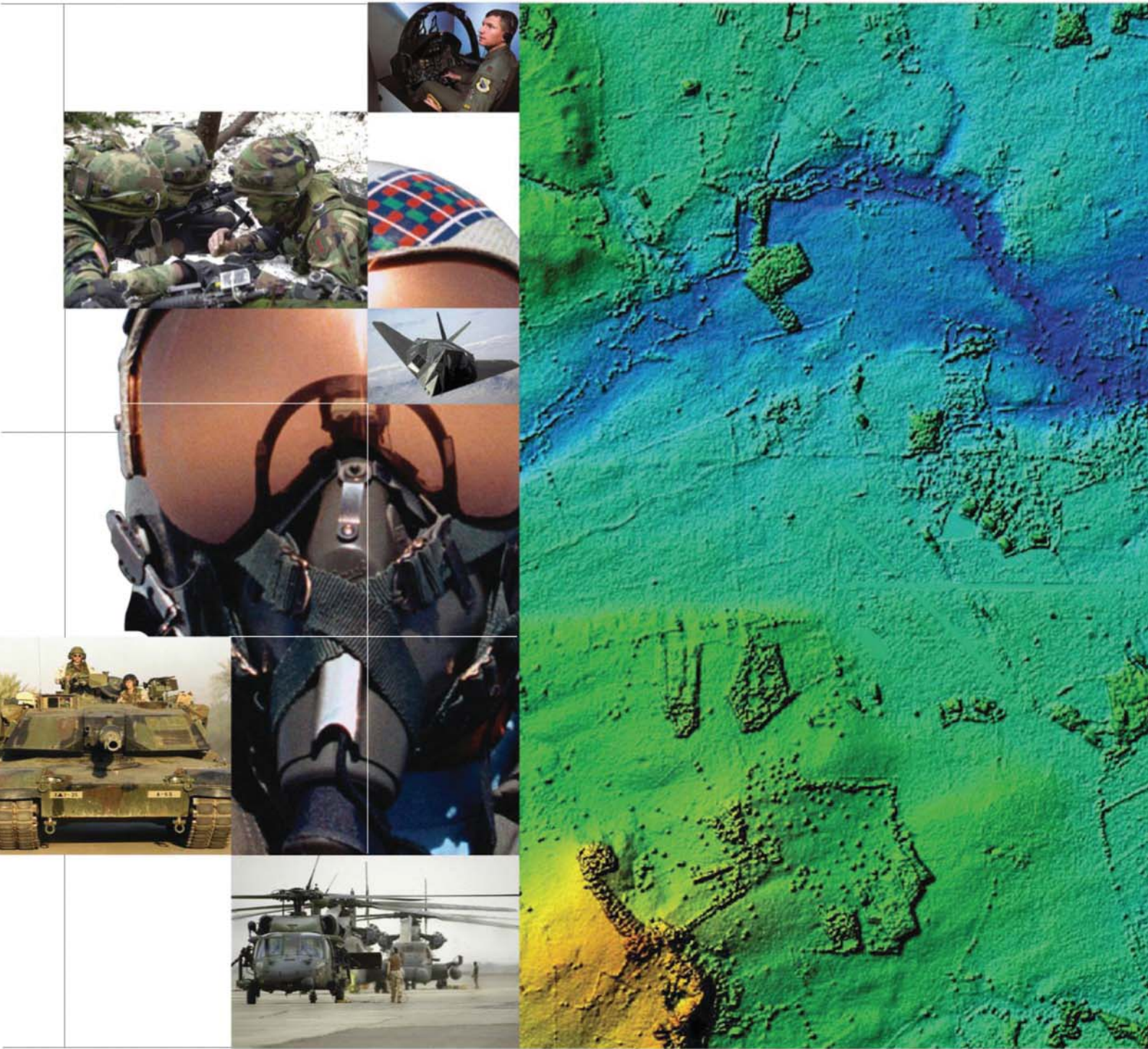


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## This edition of Ranger...

.....we have a 'first' in that we have an article on Engineering Surveying, a defence geomatics field not previously discussed in Ranger but one which is very closely related to the Associations' core areas of Hydrography and Geography. As well as describing the career structure and the equipment available to the Chatham-trained surveyors the article highlights the broad range of surveying tasks, including some that had sappers afloat, which a small team of NCO surveyors carried out in the early reconstruction period in Iraq.

As ever the 'Soundings from the Devonport Flotilla' makes enjoyable reading especially to those readers who are now firmly UK-based. The multibeam echo sounder images of the *Repulse* and *Prince of Wales* lying on the seabed off the Malaysian coast are not only a vivid example of what can be achieved with today's hydrographic technology but also a poignant reminder of a maritime disaster of over 60 years ago.

Phil Maye's year with the Swedish Army was an eye opener for those who served some time ago particularly the readily available budget and the speed with which he was able to procure, train and deploy a complete geographic team to an operational area.

Brian Tennuci's update on the Reserve Army Geographic unit, 135 Squadron, brings to the attention the vital role that TA soldiers now play in current operations and how the unit is broadening its recruitment area by having a Troop based at Hermitage.

Those who actually read the column next to this will notice several new names amongst the Associations' officers. We welcome General Patrick Fagan as the new President, Mark Burrows and Jason Cartwright as the new DGIA and Royal Artillery representatives respectively and Shaun Jones as the new DSA Treasurer.

We offer congratulations to Nick Rigby on promotion to Brigadier, to Admiral Steve Ritchie on his 90th birthday and best wishes to General Eric Barton for the future.

All in all, looking at the articles in this issue, the Defence Geographic and Hydrographic services appear to be in pretty good shape.

Enjoy a good read

*Alan Gordon*

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### **Chairman**

Colonel JAN Croft

### **Royal Navy Representative**

Captain I Turner OBE RN

### **Royal Artillery Representative**

BSM J Cartwright RA

### **DGIA Representative**

Lieutenant Colonel MRH Burrows BSc MA RE

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

# DEFENCE SURVEYORS' ASSOCIATION

## Formerly the Field Survey Association

**The Defence Surveyors' Association, or DSA, is a registered charity whose principal objectives are:**

- To maintain a permanent liaison between serving officers, retired personnel and civilians working in the Defence domain who have a professional interest in geospatial data.
- To keep abreast of current issues in the geomatics arena.
- To recognise the most significant contributions to geomatics by serving personnel through the award of annual prizes.

The Association publishes the Ranger journal on a periodic basis and organises various technical visits and social events for its members. These meetings provide an ideal opportunity to meet a wide range of people, all of whom have a connection with some aspect of the geomatics profession.

The Council of the Association is currently widening its membership and improving its services to members. *If you want to keep in touch with the survey profession and friends in the business please come and join us.*

Membership is open to personnel who are engaged, or have been engaged, in Defence related geomatic disciplines at a management level. In addition, a candidate for membership must also be known personally to at least two Members, who, as sponsors, must satisfy the Council that he or she is suitable for membership.

The cost of membership is a modest £15 per year payable by standing order on the 1st January. New members joining while still serving get free membership for the remainder of the year in which they join.

Anyone wishing to apply for membership should contact the Association at its registered address or e-mail the Membership Secretary at [membership@defencesurveyorsassociation.org](mailto:membership@defencesurveyorsassociation.org)

### **Bereavements**

It is with regret that the Association announces the deaths of AR Castiglione, J Loxton, RW Read and RO Wiltshire.

## **NEW MEMBERS**

**Brian Garvin:** served 38 years as a cartographer and geographic specialist in MoD (1963-2001).

**Peter Frampton:** former field surveyor who retired from the service as a WO2 and then joined Geo. Wimpey and Co and became Chief Instructor at its Survey Training Centre 1968-78.

**John Knight:** Assumed the appointment of Principal Lecturer at RSMS in 1989 having been a lecturer at the North East London Polytechnic.

**Charles Jenkins:** Currently serving as a Captain in the Intelligence Corps. Served as an Image Analyst at JARIC 1996-2000 and as Operations Officer/2ic RIGC(NI) 2000-2002.

**Angus Cross:** Attended the Army Survey Course in 1980-81. Recently become Regimental Colonel HQRE having completed a tour as Commander Geographic Engineer Group.

**John Loader:** Career in the RAF principally in imagery and targetting retiring in 2003 in the rank of Wing Commander. Now with BAE Systems as Programme Manager for Imagery and Geospatial Systems.

**Simon Fraser:** Career in Military Survey from 1964-91 retiring at the rank of colonel. Geodesy MSC at Oxford 1969-70 and qualified as ARICS in 1983.

# DEFENCE SURVEYORS' ASSOCIATION PRIZES 2003

The DSA awards a prize each year to a serving member of Royal Navy, the Royal Artillery and the DGIA who has made a significant contribution in their particular field of defence geomatics.

Two of the Association's three prizes for 2003 were presented to the winners at the seminar, jointly sponsored by the Association and the British Cartographic Society, held at Greenwich on the 5th of June to mark the occasion of the 60th anniversary of the Normandy Landings. Royal Navy winner Colin Thompson and the Military Geographic winner Percy Kimber were both able to be present at the National Maritime Museum to receive their awards personally from the outgoing DSA President, Major General Eric Barton. As always, each winner had made an outstanding input to their own particular 'brand' of defence geomatics as can be seen from the citations.

## **ROYAL NAVY PRIZE**

*Lieutenant Commander CD Thomson RN*

Throughout 2003, Lieutenant Commander Colin Thomson has been the Commanding Officer of Naval Party 1016 embarked in the commercial vessel MV *Confidente*. With a small team of Royal Navy surveyors, he has spent the year conducting hydrographic surveys around the UK coast as part of the collaborative partnership between the Ministry of Defence and the Maritime and Coastguard Agency. His professionalism and strong leadership and persuasive nature have combined to make 2003 one of the most successful years since the party formed over 20 years ago. The season's work involved surveying the shallow sandbanks and main shipping routes off the east coast of England followed by demanding inshore surveys off Selsey Bill, the Firth of Forth and in the approaches to Dundee. The skilled way in which he managed people and the programme meant that from start to finish excellent relations were built up between the RN team, the Master and the crew of the *Confidente*, which in turn led to NP 1016 being a very happy and a very efficient unit. The completion of a large number of different demanding surveys, all to a very high standard, proved beyond doubt that he is a very able surveyor who employs ingenuity as well as technical skill in the field. This has been an outstanding year for NP 1016, showing how joint programmes between the military and the civilian community can flourish particularly when they are given inspirational leadership.

## **ROYAL ARTILLERY PRIZE**

*Major D McCall RA*

Duncan McCall has been involved in Artillery survey and sound ranging since 1974. Over the last 15 years he has established himself at the forefront of the development of survey and sound ranging practices, both as an instructor at the Royal School of Artillery and within the Regiment.

During his current tour as the Officer Commanding the Surveillance and Target Acquisition Section within Targeting Branch at the Royal School of Artillery, Major McCall has been directly responsible for the introduction into service of the LAGERS differential Global Positioning System. He has been extensively involved with the trials and development of this equipment as well as in the preparation of instructional and doctrinal publications. Recently he also applied his expertise to examining the future of Royal Artillery Survey through the Fixation and Pointing policy paper. This required significant additional work and extensive negotiations with a number of diverse agencies.

In the last two years Major McCall has significantly enhanced the performance and capability of the new Advanced Sound Ranging System (ASP), through improved organisation, training of instructors and operators and the introduction of a computer-based training system. This system filled a gap in the training that was identified early allowing resources to be obtained and the project completed. Major McCall executed all this work.

Major McCall is widely recognised throughout the Gunners as the Subject Matter Expert (SME) on Artillery Survey and Sound Ranging. A wide range of military and civilian organisations and individuals constantly seek his advice and expert knowledge. In addition, his contribution to the development and practice of Survey over the last 15 years has been outstanding. Such effort and dedication is worthy of recognition.

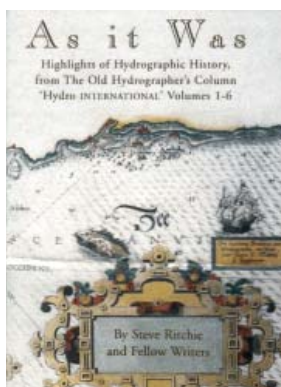
#### **MILITARY GEOGRAPHIC PRIZE**

*Major (Retired) DP Kimber*

Major 'Percy' Kimber took up the RO2 post of OIC Training Development and Testing (TDT) in the Geographic Engineer Group (GEG) in July 1995. He has always been passionate about RE Geographic and the soldiers in particular. From the outset he has always worked hard to ensure that the highest level of professional training has been provided for those soldiers. In doing so, he has consistently striven towards accrediting that training with appropriate civilian qualifications. During his time in post he led a study leading to a major review and introduction of new soldiers trades.

Major Kimber has long held a view that the content and challenges of RE Geographic technician training warranted greater recognition than the HND for which it was previously accredited. With the new trades in place he was able to work towards accreditation with a foundation degree which was achieved in late 2003 through a partnership with Sheffield Hallam University. Although this achievement involved a number of staff throughout the GEG, without Major Kimber's vision, determination and hard work this would not have been achieved. However, this vision has not stopped with foundation degrees and he is currently reviewing the mechanisms such that the soldiers can extend to a full BSc Honours. Percy has also championed the cause of suitable candidates to be sent to university to gain MSc or BSc degrees to provide a pool of SNCOs and Warrant Officers able to instruct at degree level.

As a result of his vision, tenacity and hard work RE (Geo) soldier technician training is now formally accredited to foundation degree level. This is not only a great personal benefit for the soldier's careers, both in the Service and when they leave but also generates a substantial benefit for the Defence Geographic community by providing the conditions for better motivated technicians leading to improved capabilities and retention.



#### **BOOK REVIEW: AS IT WAS - HIGHLIGHTS OF HYDROGRAPHIC HISTORY**

*As It Was: Highlights of Hydrographic History from The Old Hydrographer's Column 'Hydro International' Volumes 1-6 Steve Ritchie and Fellow Writers 2003. 118 pages 22.5 x 29.5cm format. ISBN 90-806205-5-6. Published by GITC bv.*

Not being a hydrographer I knew nothing of The Old Hydrographer's Column, or indeed the history of the science, until I came across this marvellous book. It is a collection of 48 stand alone articles each telling in wonderfully anecdotal style the story of a significant event, person, equipment or technique in the 2000-year quest to map the seas. The illustrations are superb and plentiful, particularly the extracts from the beautifully illustrated charts of yesteryear, with technical descriptions made clear by the use of simple explanatory diagrams.

This is a book that has a far wider appeal than purely to those whose business involves the sea. Anyone with an interest in surveying and mapping will find this a very good read whether taken in one go from the early peripli sailing directions through to surveying North Sea rigs with acoustic ranging systems or as a book to dip into as the mood takes you. Steve Ritchie's latest book is a must for all Ranger readers. It is available from PV Publications, for information call 01438 352617.

# HANDOVER OF THE ASSOCIATION PRESIDENCY

A rare event that has only happened five times since 1945 took place within the Association this year. On the 30th of June 2004 Major General Eric Barton CB, MBE, retired after a record breaking thirteen years as our President and Major General Patrick Fagan CB, MBE, took up the Office. A dinner held by the Council in 135 Independent Geographic Squadron Officers' Mess marked the occasion and an account of it is recorded below.

Both Officers, in their time, served as Director General of Military Survey after most successful and distinguished careers as sapper surveyors. General Barton, a member of the Association for over 32 years, also served as Chairman of the association in the 1970's. During this time military surveying has seen many changes, due in part to advances in technology and also to the changing needs of our fighting forces. The Association too has evolved in its role of supporting serving and retired surveyors, changing its name from the Field Survey Association to the Defence Surveyors' Association to reflect the broader range of interests and activities it embraces now. Whilst in office, our President brought his considerable experience as a leader, staff officer and practical, professional surveyor to bear in supporting the running of the Association, thereby providing great benefit to it and wise guidance to its Council for a period that spanned the time in office of five chairmen.

Many members of the Association expressed their wish to show their appreciation for the fine support and good work so generously given by Maj Gen Eric Barton during his long time in Office as our President. They did this by contributing handsomely towards the purchase of a garden seat. The General was delighted with his gift, which he now uses frequently. He thanks all who have been involved most sincerely and appreciates, particularly, the many warm hearted messages from members expressing their thanks and good wishes for his retirement.

We are also most fortunate in having as his successor Major General Fagan, who has also been a member of the Association for many years. He brings his own wealth of knowledge and experience of military surveying to the president's post that augurs well for our future. We bid a warm farewell to Major General Barton with gratitude and respect for his dedication to the Association and all he has done for it. We wish him a long and happy retirement and many years of continued membership. We extend a warm and enthusiastic welcome to Major General Fagan and look forward to his involvement in the affairs of the Association in the years to come.

## **General Barton's Retirement Dinner**

The Chairman, Colonel (Retd) JAN Croft, presided over a celebratory dinner hosted by Council Members to mark the retirement of Major General EW Barton from his appointment as President of the Defence Surveyors' Association. The dinner was held in the Officers' Mess of 135 Independent Geographic Squadron Royal Engineers (V) at Mercator House, Ewell on Saturday 30 July 2004.

In recognition of Eric Barton's long association with the DSA as a member for 37 years and as President for 13 years John Croft remarked upon his cheerful support for so many of the Association's events during his period of office and membership which was concurrent with a distinguished career with Military Survey. General Eric's career included service with DOS in Africa, 13 Squadron in Aden, at Feltham and with the Ordnance Survey during which time he steered the separation of Military Survey from Ordnance Survey in the wake of the Serpell Report.

John Croft expressed the thoughts and wishes of all members that he will continue to recover from the setback to his health that he has suffered and presented an inscribed brass plaque to be fixed to a garden bench of his choice that will be purchased from the contributions of many DSA Members. By way of appreciation for her consistent attendance at DSA events Pam Barton was presented with a Hydrangea Tiara plant.

Eric Barton expressed considerable reluctance at having to give up this appointment but considered it to be prudent at this time to concentrate on his physical and mental recovery. He thanked everyone for the gift and good wishes and described his pleasure at being able to attend this dinner. He concluded by congratulating his successor, Major General Pat Fagan, upon his appointment. Sincere thanks are recorded to Major Amanda Schell TD, Officer Commanding 135 Independent Geographic Squadron Royal Engineers (V) for access to her Officers' Mess. *(Report by Ken Joels)*

## **Major General PF Fagan**

Patrick Fagan was commissioned into the Corps in 1955 and, after various courses, served in Gibraltar. He has always been interested in exploration and mountaineering and it was this that led him in due course to specialise in Survey, joining the Army Survey Course in 1961. He was then fortunate to be selected as a surveyor for an expedition to the Karakoram in 1961/62 and again later for the Combined Services Expedition to South Georgia in



1964/65 – for which he was appointed MBE and had a mountain named after him. In between these expeditions he served with both 19 and 13 Squadrons in Aden and enjoyed a splendid time working on the border survey between Oman and the UAE.

More typical appointments included service with 42 Survey Engineer Regiment at Barton Stacey and, following an MSc at UCL, a tour as head of the Air Survey Branch at Ordnance Survey. This led to the first of several tours at Feltham, both in the Directorate and with MCE, as it then was, and his first links with 135 Squadron at Ewell, and with the Field Survey Association, later to become the DSA.

He then had two tours in NATO, in the Netherlands and in Belgium (SHAPE), before returning to Feltham for his last six years, ending as Director General of Military Survey and retiring in 1990. He was awarded CB on his retirement.

Since his retirement he has worked for a while on various consultancies, most rewardingly in Saudi Arabia, and with a number of voluntary bodies, some of which he still serves as Chairman or President. He has continued to be active in various forms of expedition, principally in the Arctic and wider Himalayan regions and has been a frequent writer on such trips. He has written five articles for Ranger on his more exciting surveying tasks.

Patrick Fagan is a widower, with two married sons and one grandson, and lives in London.

He has had the privilege of being a student of General Barton, the retiring President, at the School, and of serving with him in Aden, the OS, and in MOD.

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# THE UNITED KINGDOM HYDROGRAPHIC OFFICE AND DEFENCE



By Lieutenant Commander David Wyatt RN

## History

Established in 1795, the United Kingdom Hydrographic Office (UKHO) is the world's premier supplier of paper navigational charts and publications, with a folio of over 3,500 charts and 220 publications. Based in Taunton, Somerset, and employing around 1,000 staff, the UKHO became a Trading Fund within the Ministry of Defence in 1996, and is obliged to finance itself from trading revenue.

The mission of the UKHO is to meet national, Defence and commercial customers' needs for charts and other hydrographic information in support of safe navigation. Over three quarters of the UKHO's charts and publications are sold to the worldwide merchant marine to meet their obligations under the Safety of Life at Sea (SOLAS) regulations. The UKHO's single largest customer is the Royal Navy, which accounts for about 15% of turnover.

Technological advances are resulting in a shift in customer demand from paper to digital navigation methods. The UKHO is preparing for the digital era, building on the values of the Admiralty brand, by investing heavily in its IT infrastructure, and developing a range of new digital products and services. These include the award winning worldwide tidal prediction service, TotalTide, and the introduction of a free seven-day tidal prediction service, EasyTide, on the UKHO website. UKHO tidal data is also broadcast by the BBC on its regional television and radio weather forecast services.

The UKHO is a leader in the development of electronic chart services to internationally approved standards for worldwide navigation; the Admiralty Raster Chart Service (ARCS) was one of the first worldwide correctable electronic chart services from a national hydrographic authority. Electronic Navigational Charts (ENCs), based on intelligent (vector) digital data for use in Electronic Chart Display and Information Systems (ECDIS), are also being produced for defence and commercial use. The service allows the navigator to interrogate the features on the chart to obtain additional information.

In 1795 the first Hydrographer of the Navy, Alexander Dalrymple FRS, was appointed to review the 'difficulties and dangers to his Majesty's fleet in the navigation of ships' and the first Admiralty chart was produced in 1800. The post of Hydrographer of the Navy was held by a serving Royal Navy officer until January 2001 when Dr Wyn Williams was appointed National Hydrographer and Chief Executive of the UKHO whilst the title of Hydrographer of the Navy was briefly suspended before being resurrected in the dual post of Captain HM and Hydrographer of the Navy residing in Devonport.

This civilian appointment did not alter the close relationship between the UKHO and the Royal Navy Hydrographic Surveying Service (RNHSS) built up over the previous 206 years. The various branches within the UKHO continue to liaise closely with the RNHSS, the Directorate of Defence Intelligence Joint Environment (DI JE) (formerly the Directorate of Naval Surveying, Oceanography and Meteorology) and the HM Training Group (HMTG) at HMS Drake. The RNHSS units regularly call upon UKHO expertise for advice and guidance during the conduct of their worldwide Hydrographic Military Data Gathering (HMDG) operations.



Chart correcting by hand





An "ENC" Bridge

## Defence Business

Of the nearly 1000 personnel employed at the UKHO, only four are uniformed members of the RN. One specialist Chief Petty Officer works in the Minewarfare Data Centre, the remaining three are serving HM specialist officers who make up half the Defence Services and Surveying (DSS) branch, which is headed by a Commander; this branch deals with the management of business between the UKHO and Defence. MoD requirements are formulated by the Defence Maritime Geo-Spatial Board through requirements set by a series of MoD Functional Customer Groups (FCG). These range from the Deterrent Group, Amphibious Land Group to the MW Group and the Survey/Oceanography Customer Groups. The finalised and prioritised requirements are articulated in the Defence Hydrographic Programme, which ensures provision of navigational charts, navigational warnings, operational support for the strategic deterrent and other military tasks and support for future platforms, weapons and sensors.

UKHO meets defence requirements through the placement of contracts called Tasking Authorisation Forms (TAFs), which vary in duration up to four years. TAFs are funded by MoD through DI JE who co-ordinate the issuing of Statements of Requirement (SoR) from the individual Functional Customer Groups. The Technical Solutions (TS) are replies generated by UKHO in response to the individual SoRs. There are approximately 50 TAFs in operation at present.

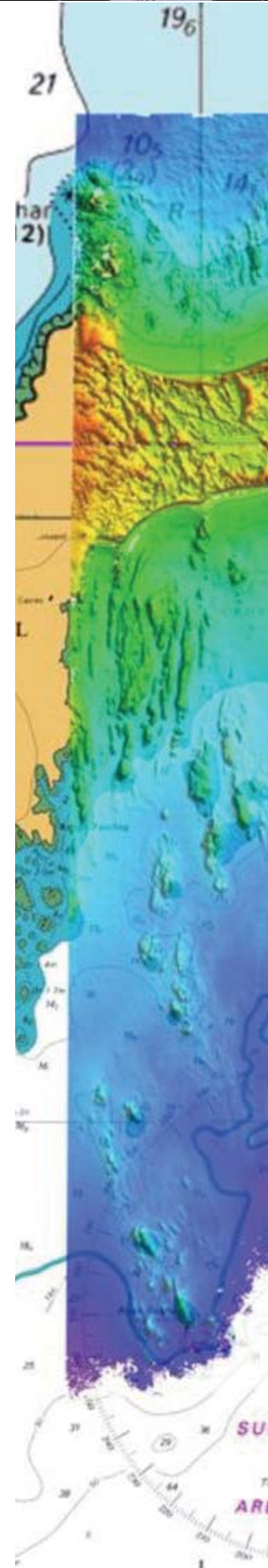
## UKHO involvement in the Defence Hydrographic Survey Process

Once defence hydrographic survey requirements have been identified and prioritised by DI JE in response to Defence Customer needs, the UKHO is charged with initiating Hydrographic Instructions (HIs) for issue to the appropriately tasked HSS Units. This requires UKHO cross-branch co-ordination to ensure the most up to date information is supplied to the unit undertaking the survey to enable detailed planning to be conducted and eventually to allow meaningful comparison of results in the field prior to rendering the completed survey. Many UKHO branches are involved in the compilation of HIs, with the overall co-ordination conducted by the RN Staff Officer Survey Planning. RNHSS units receive HIs, accompanied by numerous historical data and associated information, generally six weeks prior to the planned start date of survey tasks. This allows sufficient time, if necessary, for more detailed explanations of requirements and correspondence between the HSS unit and the

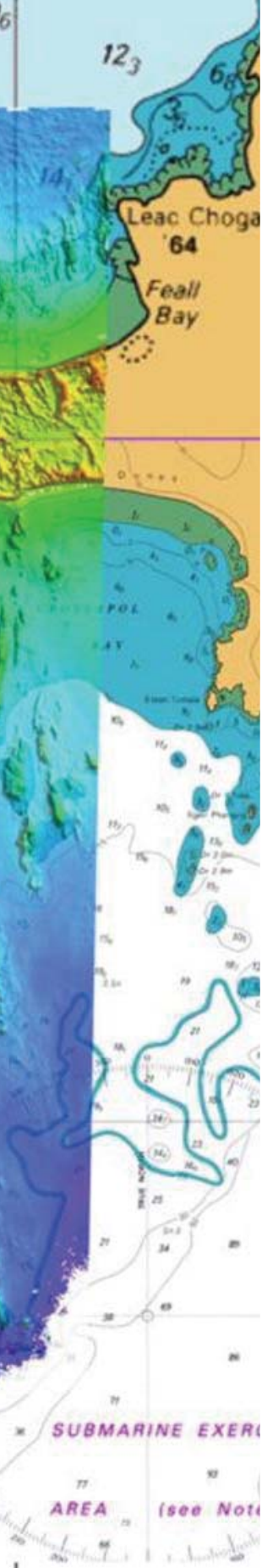
various UKHO branches. Throughout the survey fieldwork UKHO branches are available to provide advice and guidance to the HSS unit on all aspects of the survey task, including the processing of geodetic field and tidal data. On completion of the survey the HSS unit renders the bathymetric dataset, accompanied by a detailed report and the other records, such as tidal data, seabed texture data, environmental data, details of the coast line, charted features, lights and buoys and any photographic views taken. All rendered data undergoes a detailed appraisal and validation process at UKHO, as a result the HSS unit will receive a comprehensive appraisal



Checking chart data for accuracy







report, which will contain any queries or requests for clarification. Once these have been responded to by the HSS unit the data will be used for charting or publication in other products to support the defence and civil maritime communities.

The Survey Verification (SV) branch is part of the Digital Survey Processing section, within the wider Hydrographic Data Centre (HDC). HDC(SV) is responsible for ensuring that the digital bathymetry in Defence surveys and surveys conducted under the Civil Hydrographic Programme meet the required standards articulated in Hydrographic Quality Assurance Instructions or IHO S44 as well as any specific requirements detailed in the Hydrographic Instruction. Detailed checks of the rendered processed data are made to ensure that there are no unacceptable platform or system induced artefacts and that the data has been adequately cleaned through the use of appropriate automated cleaning parameters and manual checking. The task has become considerably more challenging with the recent introduction of multi-beam echo sounder (MBES) systems into all RNHSS units; the volume of data received is measured in giga, and soon tera, bytes for each survey. HDC(SV) uses a standard set of software to verify data, currently CARIS HIPS, for detailed analysis of the data and Fledermaus for final visualisation and checking of the reduced data set prior to input into the UKHO database. No amendments to the data are made without the approval of the rendering HSS unit.

### Wider Support for the Defence Community

Although a vital task for the branches involved, the appraisal of rendered survey data is only a small part of their overall work. Support to the defence and civil customers is provided in the form of a variety of products and services, some of which are conducted in collaboration with other branches whilst others are with external defence and commercial organisations.

### Geodesy and Photogrammetry

The Geodesy Section at the UKHO is a centre of expertise for advice on horizontal datums, grids, projections, hydrographic survey positioning, GPS processing and other geodetic queries. It has amassed an extensive archive of Survey Control Station and Horizontal Datum information from around the world. By drawing on this archive, and the expertise and experience of its staff, the Geodesy Section is able to provide information, advice and guidance on all aspects of horizontal positioning to the Chart Branches, other sections of the UKHO, RNHSS and other Defence customers. The



*Compiling digital charts*





Geodesy Section also works closely with DI JE and other areas of MOD providing survey positioning advice and other geodetic guidance where necessary.

The Geodesy Section provides the source material for Hydrographic Instructions sent to all RNHSS units. This may include station descriptions, co-ordinates and copies of any surveys and charts in the area of operation. Information about local horizontal datums is also provided, together with parameters to correctly transform data to WGS84.

Support is provided to the RNHSS while operating in the field; this may include advice and guidance on the most effective use of geodetic information, and the use of GPS equipment and software. When the final survey data is received by the UKHO, the Geodesy Section appraises the rendered information for positional accuracy.

The Photogrammetry and Remote Sensing Section of the UKHO acquires and interprets vertical photography and satellite imagery of coastal locations worldwide. The resulting photo plots and reports are supplied to Chart Branches and Defence customers to improve navigational charting and highlight areas which require detailed hydrographic survey by the RNHSS, or are used in Defence and Operational products. The section also tasks *HMS Endurance* to fly vertical aerial photography during their annual Antarctic deployments and it is involved in training the crews of the Lynx helicopters to carry out this work.

Photography is scanned for viewing in stereo in a digital photogrammetric workstation (DPW) in order to plot and measure detail accurately. The DPW also has a depth measurement capability, currently being tested, permitting measurement down to 10-15 metres, depending on the photo quality and conditions at the time the photography was acquired.

Commercial satellite imagery is frequently used to derive detail in areas which are remote, expensive or difficult to survey from a ship or an aircraft. Imagery of various spatial resolutions is used (varying from 1m resolution such as IKONOS down to 30m resolution Landsat imagery), choice depending on the scale of charting and the nature of the detail to be plotted. In consistently cloudy areas radar imagery is occasionally used to plot features.

The section works closely with the Geodesy Section of the UKHO and uses their library of Ground Control Points to accurately refer plots from satellite imagery and therefore Admiralty charts to known horizontal datums such as WGS 84.



*HMS Echo*



## Environmental Data

The Marine Environment Information Centre (MEIC) manages and develops maritime environmental databases on behalf of the RN and then exploits those databases to provide a range of products and services to satisfy the needs of the defence customer. The scope of the environmental information managed includes physical oceanographic data, marine biological data and seabed data, which includes marine geology, wrecks, cables, oil and gas pipeline and wellhead data and other seabed objects or features. MEIC products include Environmental Briefing Dockets (EBDs), digital climatologies, specialised products to support Mine Warfare or Amphibious operations and Maritime Foundation Data (MFD). Information is also provided to support a wide range of UKHO navigational products. Increasingly there has been a change in emphasis away from the acquisition and databasing of data towards the provision of new and improved products to support military tasking and operations.



*GPS in the Antarctic*

MEIC is organised into four main sections, each with particular responsibilities. The Data section covers acquisition, processing, validation and databasing of data for use within the whole branch. This section also includes the NATO Rapid Environmental Assessment (REA) Archive Co-ordinator. The Analysis section is responsible for the development of oceanographic climatologies, characterisation of ocean features and internal waves, analysis of data describing seabed geology, distribution and characteristics of marine life. The Products section co-ordinates the production of EBDs, Amphibious Support products and MFD. The Seabed section maintains a Route Survey Database and produces mine-warfare guidance publications; additional activities of this section include the management of oil and gas, wrecks and cables databases to support UKHO's navigational products and services.

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## Charting Support

Fleet Charting and Support (FCS) provides a variety of specialised maritime products, operational graphics and support services to the RN and MoD. The products and services are specified in liaison with specialist customer groups which include the work sponsor (DI JE) and representatives of the defence end-user community. Additionally, there is a need to be flexible and responsive to MoD's changing operational needs.

The work programmes conducted include:

- Survey planning and data processing services for *HMS Scott's* multi-beam swathe bathymetry data gathering activity. This includes quality assurance, utilising various data visualisation tools, and providing feedback to the ship's staff in the form of a survey appraisal. This is to maintain quality standards and to seek continual improvement in the efficiency and effectiveness of survey operations.
- The Survey Equipment and Support Unit (SESU) supports the RNHSS's specialist oceanographic and geophysical survey equipment, such as the CTD (conductivity, temperature & depth





– probes), gravity meters, magnetometers and current meters. This includes their calibration, maintenance and testing, working closely with ships’ staff to ensure their optimum interfacing and operation (including sea-riding, as required), liaising with manufacturers over equipment specifications, and training RN equipment maintainers in the care and operation of the instruments. This is all aimed at providing a service that maximises the utility of the survey instruments and the quality of the marine environmental data that is acquired whilst the RNHSS units are on HMDG operations.

- Two other sections (Operational Charting and Air) compile, produce and maintain a variety of marine cartographic products designed to particular specifications to support RN operations. These include bathymetric contour charts, to support both surface and submarine operators, and a range of bespoke, operational graphics, such as those used for RN and NATO training and exercises. The Air Section compiles maritime aeronautical products in support of RN and RAF operational aircraft, including the RN’s Merlin and Sea King helicopters and the RAF Nimrod MPA (Maritime Patrol Aircraft). All these operational charts utilise information held in UKHO’s own databases of the marine environment and may also combine data from other agencies, such as the Defence Geographic Centre, Feltham.

### Digital Defence Products

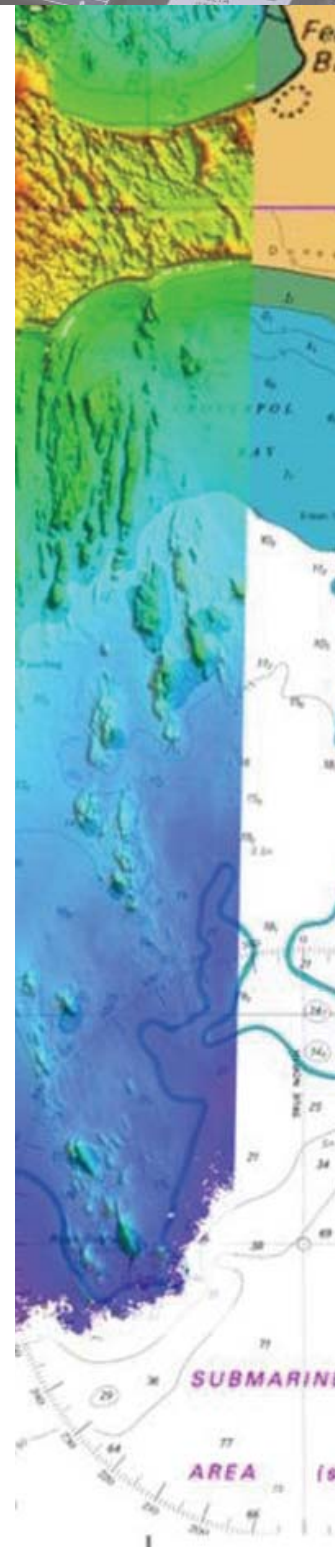
As part of the migration to all-digital navigation by 2008, the RN will be using the UKHO’s ARCS and all available ENC products as digital replacements for the navigational paper chart in its new Warship Electronic Chart Display and Information Systems (WECDIS) fits. At present there are a significant number of additional defence specific charts, overlays and digital data sets of many different types and formats that are used to provide a wide variety of additional environmental information to maritime planners and operators at sea. Additional Military Layers (AML) is the new family of products that are designed to deliver all this additional environmental information in a consistent and coherent manner for use in WECDIS and Command Support Systems (CSS).

AML will support interoperability, assist in the migration to net-centric warfare and contribute towards decision superiority and improved situational awareness by enhancing the Recognised Environmental Picture (REP). All this being possible by the provision of consistent environmental information.

The existing product specifications, established in 2001, encompass:

- Routes, Areas and Limits including fishery and Territorial Water limits, danger and exercise areas and shipping routes;
- Full wrecks and major bottom object information;
- Mine counter measures contacts;
- Generalised coastline and boundaries for contextualisation together with major lights and buoys and other significant features;
- Bathymetric contours and soundings to support a wide range of display scales;
- Seabed sediment and detailed beach data.

In addition to an extended S-57 specification, inception work has been progressing on developing DIGEST C VPF implementation annexes to improve interoperability with land operators and the US defence community. Current effort is concentrating on creating three further products that are due for completion within the next few months:





- Climatological information for the water column including salinity, temperature, density and sound speed profiles, ocean currents and marine mammal distributions;
- Bathymetric models to match the contour products defined above;
- Climatological information describing meteorological conditions.

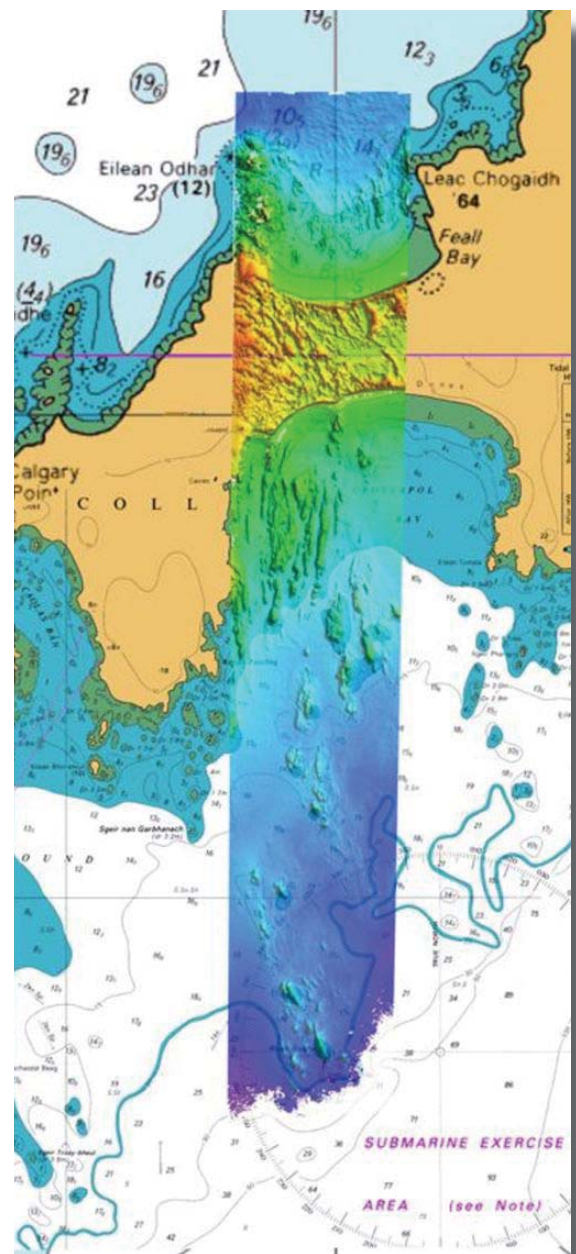
The UKHO is well on its way to producing AML data for the UK continental shelf, initial coverage was completed by April 2004. However flexibility is also required as response to requests for data to support trials and exercises in other geographical regions takes effort away from the core development. Much work has been concentrated on locating and identifying the valid sources of data predominantly from within the UKHO but also from external sources. To expedite the capture process UKHO is progressing preparation of external data capture contracts.

Very successful trials of AML were conducted during Joint Maritime Course (JMC)022 and JMC031 which confirmed the military utility of AMLs. UKHO has to manage the growing demand for both sample and trials data, such as a US mine warfare exercise in the Gulf of Mexico in late 2003 and the Joint Winter 04 exercise earlier this year.

UKHO is devoting considerable time and effort in highlighting AML capabilities to the operational community, the Directorate of Equipment Capabilities (DECs) and the Integrated Project Teams (IPTs) so that the benefits that AML can bring to their particular activity is more widely understood. Defence contractors, IPTs and DECs are receiving up-date briefs on the contribution that AML can make to situational awareness (e.g. as overlays to standard navigational charts displays within WECDIS) and the potential for direct data provision to tactical decision aids and weapon systems (e.g. direct data provision into MCM operations).

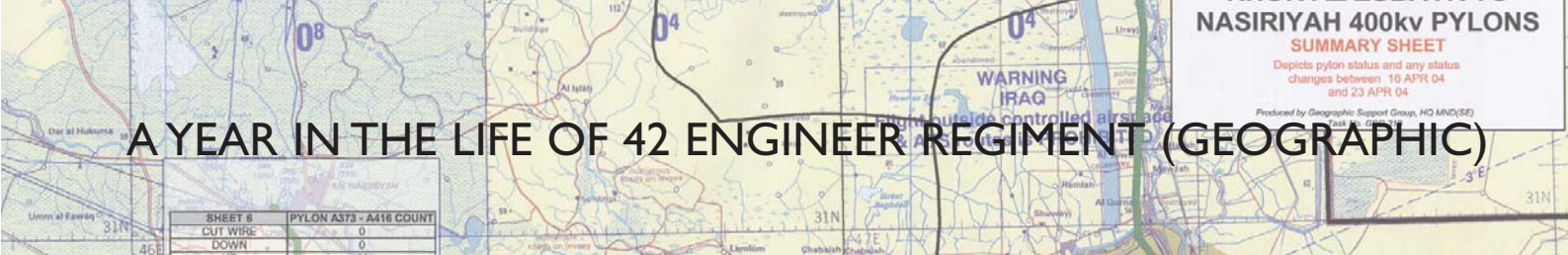
**Conclusion**

UKHO personnel, both civilian and uniformed, do become directly involved in military operations; a number of personnel are members of the RNR, some of whom were called upon during the recent Gulf conflict, whilst others have been active in the re-building phase in a variety of tasks. This direct participation in military operations reminds all within the UKHO that despite having bi-lateral agreements with numerous national HOs, providing products to the worldwide mercantile marine and commercial leisure markets, defence requirements and the RN needs still remain the primary focus of operations for the UKHO.



*Hydrographic product of Coll*





# A YEAR IN THE LIFE OF 42 ENGINEER REGIMENT (GEOGRAPHIC)

*By Lieutenant Colonel Mark Burrows: CO 42 Engineer Regiment (Geo)*

The great thing about the UK's tried and tested Regimental structure is that when it is fully manned with a competent crew of officers and senior non-commissioned officers, it runs itself. Challenges invariably occur when posts are gapped or individuals are detached and this has been the case for much of this year. As of this month, the Regiment has nearly 30 individuals deployed on overseas operations:

## **IRAQ – Operation TELIC**

Listening to Radio 4 this morning, I heard the Shadow Defence Secretary talking about deploying UK forces into the US sector and noted that once again the Regiment's detachment of one officer (Captain Chapman RE) and twelve other ranks will be busily preparing mapping and other geographic information in anticipation of this potential move. They in turn, will be supported by our Warrant Officer (WO2 Hill) based in the US CENTCOM map depot in Bahrain. The media have not covered recent events in South Eastern Iraq particularly well but suffice to say, things have been busy with more than their fair share of unrest, riots, bombs, mortar and rocket attacks and improvised explosive devices. The Geographic team has been actively producing up-to-date town plans and image maps, complete with the local tribal information, in a similar way that mapping was produced for Northern Ireland. In Ulster there were in essence 2 tribes – one green and the other orange. In the Basra region alone there are in excess of 20 different tribes in various alliances, which vary from day to day. The main effort for the next few months is preparing for the first elections and here again the Geographic team are playing a significant role producing mapping depicting polling stations and providing graphic and printing support to the Information Operations campaign.

## **KOSOVO – Operation OCULUS**

Our Geographic team in Kosovo numbers only 3 and is located outside Pristina in support of the Intelligence Surveillance and Reconnaissance Unit. The Unit's task is to support operations against terrorism (mainly local, rather than international), drug, weapon and people smuggling, and anything else that might disturb the uneasy peace that currently prevails. Their lifestyle varies from being fairly easy with ample opportunity to visit the gym and generally relax, to days of non-stop frenetic activity when an operation is in the making. The Geographic folk there, led by Sgt Wharry are well supported by an unmanned aerial vehicle, run by a commercial company that provides an agreed number of flying hours per week.

## **BOSNIA – Also called Operation OCULUS for the moment**

We have moved our Geographic team from Headquarters Multi-National Brigade North in Banja-Luka and reconfigured it in Sarajevo under the leadership of Major Sladden RE. This is in preparation for the handover of responsibility from NATO to the EU, which is due to take place in January 2005. The chain of command seems to an outsider, like me, to be a little tortuous but I am assured it will work.

## **FALKLAND ISLANDS**

42 Engineer Regiment (Geographic) is obliged still to provide an individual (currently L/Cpl Oliver) to support HQ British Forces South Atlantic. Mines left from the 1981 conflict remain in the ground and mapping of those minefields needs to be maintained. Civilianising the post has been considered but potentially could be more expensive.

## **TRAINING**

While approximately 10% of the Regiment is on operations, another 10% has just arrived back and a further 10% are preparing to go. The remainder are training:

**As soldiers**, with the Regiment running its first Junior Non-Commissioned Officer Cadre last year on Dartmoor to raise the overall standard of fitness, living in the field, marksmanship, first aid and basic leadership. The Cadre was well suited to character development with over 25 individuals passing off and ready to receive their first tape. The PINNOCKS PROGRESS exercise has





been reintroduced to build on what was learnt on the cadre. The bulk of the Regiment deployed to Sennybridge in July for 10 days and came back refreshed and generally more prepared to take on the rigours of any future deployment.

**As Geographic Technicians**, when at least once a month Squadrons ran a technical training week and the Regiment too, ran an indoor technical exercise to refresh what was learnt at the Royal School of Military Survey and almost equally importantly ensure that they complete a set amount of “Experiential Activity” to qualify for their foundation degree. All junior ranks that complete the 2 technical courses now qualify for a foundation degree in surveying. Their training is backed by a number of exercises such as DHOWES MARKER - a 3-week project in Gibraltar to tie in local surveys, produce large scale mapping of military facilities, and support the Gibraltar Heritage Trust.

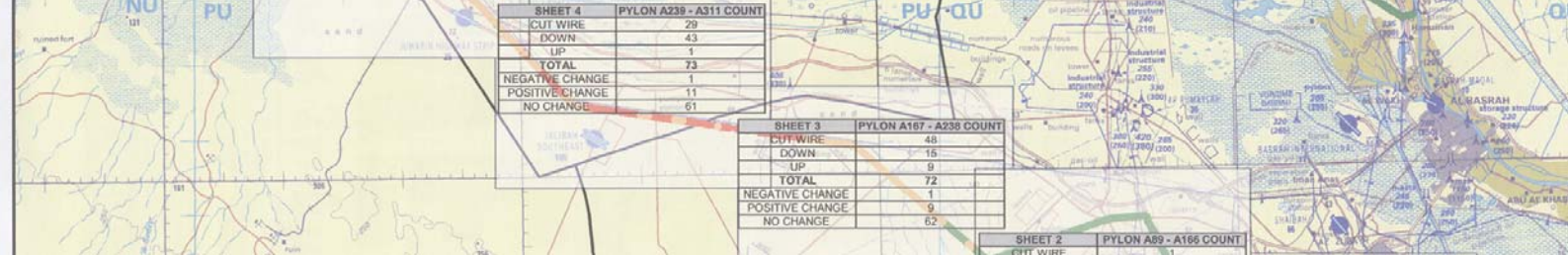


*Military skills are a vital important part of training*

**As Construction Engineers**, in case elements are called upon to temporarily abandon their geographic skills and return to their roots as combat engineers. Lt Hall took his troop to Scotland to carry out a task in support of the local community. Like most tasks of this nature, it had its unique challenges, which ended up with over 5 tonnes of hardcore being delivered by helicopter.

**In support of Field Formations**, such as the 2 UK Divisions when they deploy, 16 Air Assault Brigade, 7 Air Defence Brigade and 102 Logistic Brigade, to name but a few. Most of the larger formations have organic geographic staff but they normally require some degree of augmentation, and this comes from the Regiment. Each formation is different and requires their particular style of geographic support.

**In Support of NATO**, by inviting NATO geographic units to gather in a field in Northern Germany to work together as part of Geographic Support Group. The Exercise was coordinated by Headquarters Allied Rapid Reaction Corps and the day- to-day management was left to 14 Geographic Squadron, now lead by Major McCarthy RE. While visiting the exercise, I was struck by the overall enthusiasm of all the participants to make a contribution, make their presence felt and exchange ideas and to



improve interoperability and interdependence. There was a general air of optimism and vivacity to make things work that gave me the strong impression that we could readily work together on operations if the situation arose.

In the mountains and under the sea, on adventurous training exercises. The annual pilgrimage was made to Norway last winter to maintain basic skills of surviving and operating in cold weather and in contrast, a team left for the Red Sea to carry out an intermediate standard diving expedition. 14 Geographic Squadron competed a sea canoeing exercise off the coast of Cyprus, and 16 Geographic Support Squadron has completed a number of arduous hill walking excises in the Peak district and in Devon. Such exercises foster comradeship, develop a team spirit, and help to develop confidence in soldiers' own abilities. The Regiment is normally able to take service men and women from other units and the Regimental Operations Officer, Captain Richardson RE is able to provide details of forthcoming expeditions.



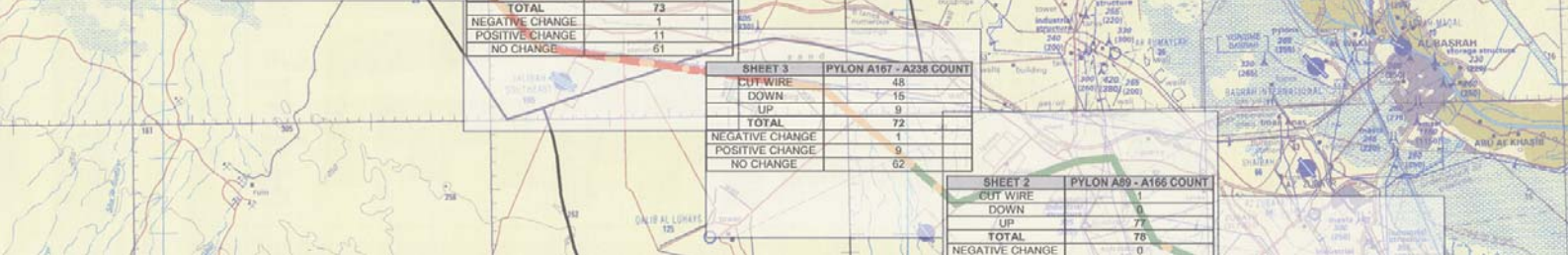
*Multi-national exercises aid the exchange of views*

On the sports field, and winning the Army minor units Rugby and Cricket competitions this year. On the hockey pitch we won the inter-RE Regimental Competition and in a number of minor sports, ranging from triathlon to paragliding, we seem to win at something. The trophy cabinet is now quite full!

### **MAN and WOMAN POWER**

As alluded to earlier the Regiment self-runs well when fully manned. Unfortunately we are not fully manned, but now have the funding to recruit up to full strength and expand by 15% both on the Regular side and within the Territorial Army. The TA Squadron, 135 Independent Geographic Squadron RE(V) is, in spite of its name, part of the Regiment and is based in Ewell in Surrey. This summer the TA squadron established a 'Detached Troop' based in Hermitage, near Newbury, to integrate better into the Regular Army training regime, and is actively recruiting anyone with an inclination towards topographic surveying, printing, marketing and distribution. Anyone interested should contact Captain Murray on 0208 393 0981/0982.

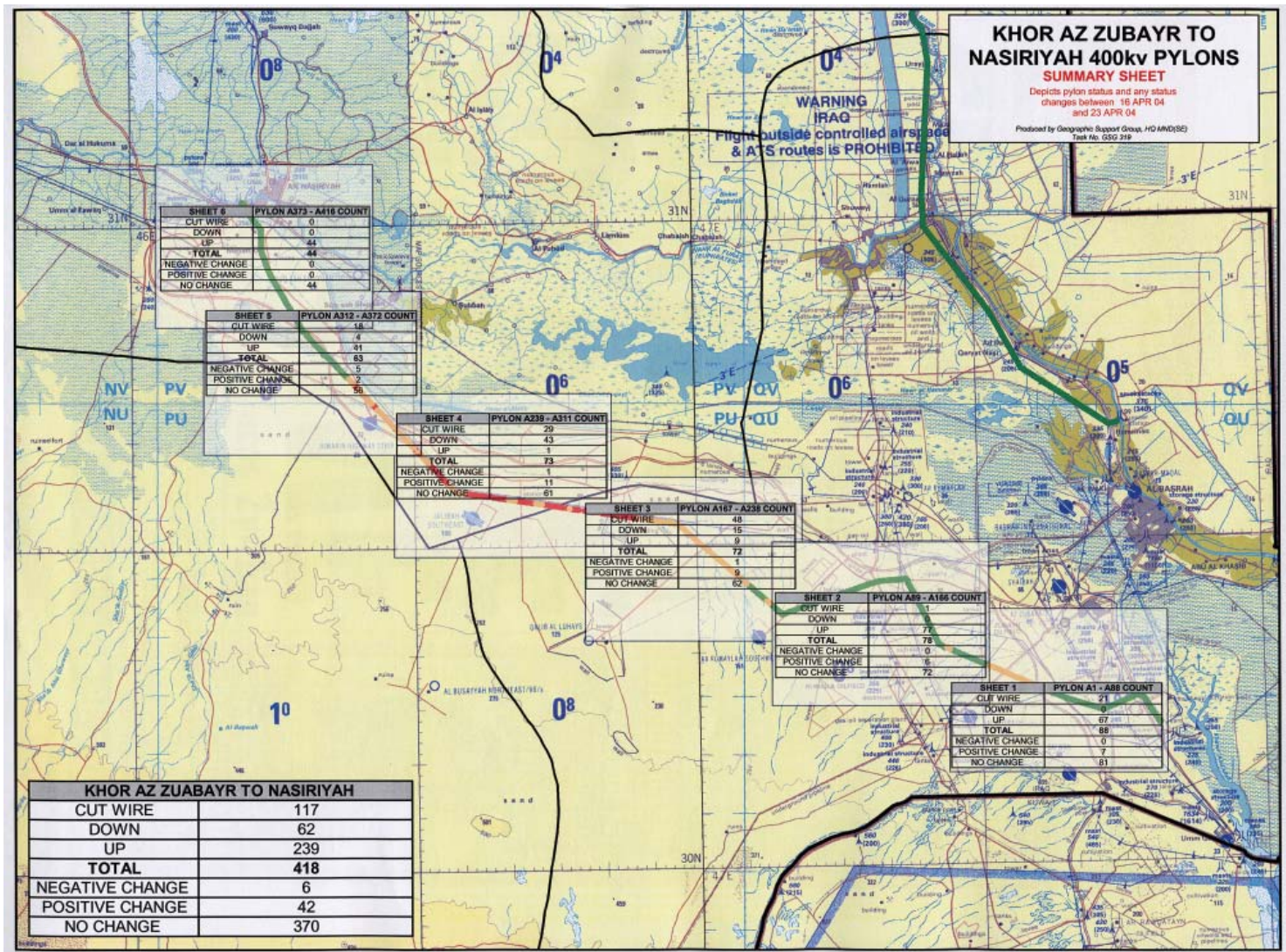




This year also saw the first female RE corporal promoted to Sergeant and it is happening in 42 Engineer Regiment (Geographic). Cpl Whitlock is soon to be promoted and will take up a post in the Royal School of Military Survey. This promotion has caused a few feathers to be ruffled at the Alma Mater in Chatham where the Great and the Good have now to agree upon a design for female senior non-commissioned officers' Mess Dress - and this needs to happen before Christmas!

Sadly I have to report that two of our soldiers tragically died this year. They were both given funerals with full military honours as was befitting their ranks. They were a salutary reminder to us all that our life in this world is ephemeral. May they Rest in Peace.

In summary, the Regiment is as vibrant as ever, is poised to expand and is actively looking for recruits. Overseas, it is actively engaged in operations providing Geographic support as and when needed. By actually being there, embedded within formations, it is possible to provide tailor-made support in a timely manner. The training currently undertaken is both challenging and varied but highlights the fact that we ask much of our soldiers who are expected to remain flexible and carry out a range of tasks in different climates in different parts of the world, and often at short notice. This capability deserves much respect and should be cherished.



Pylons map - a typical product from a Geographic unit



# SOUNDINGS FROM THE DEVONPORT FLOTILLA

By Commander JJ Faulkner RN

Another eventful period in the Devonport Flotilla with the Hydrographic and Meteorological (HM) ships and units with plenty of positive news. Both our new ships *HMS Echo* and *Enterprise* are currently deployed enjoying operations abroad and getting involved in international naval and military exercises. Against a background of severe financial constraints the HM units of the Fleet have fared exceptionally well reinforcing the view that environmental information superiority is an appreciated warfare enabler and a battle-winning component of any campaign.



*The Hydrographer's Office - HMS Scott off the South African Coast*

The squadron's smallest ship, *HMSML Gleaner*, has been actively involved in surveys off London, Portsmouth and Southampton and is currently moving from Dover to Harwich. The challenges thrown up by surveying with an ageing multibeam echo sounder system (MBES) in dynamic conditions continue to keep this small team on their toes.



*HMS Gleaner in London*

Naval Party 1016, a team of surveyors embarked in the commercial vessel *MV Confidente* has once again had a remarkably successful period over the Summer months. The precision of the bathymetric data gathered by her dual headed EM3000D MBES system has revealed a great deal of information on the dynamics of seabed movement in unstable. The level of movement of sandwaves, always acknowledged but not fully quantified, has proved to be a much more significant phenomenon than hitherto believed. Much more on this topic in future articles. Furthermore, the precision of the system has revealed shortcomings in our knowledge of co-tidal information in some offshore areas adding additional data processing challenges to the team.

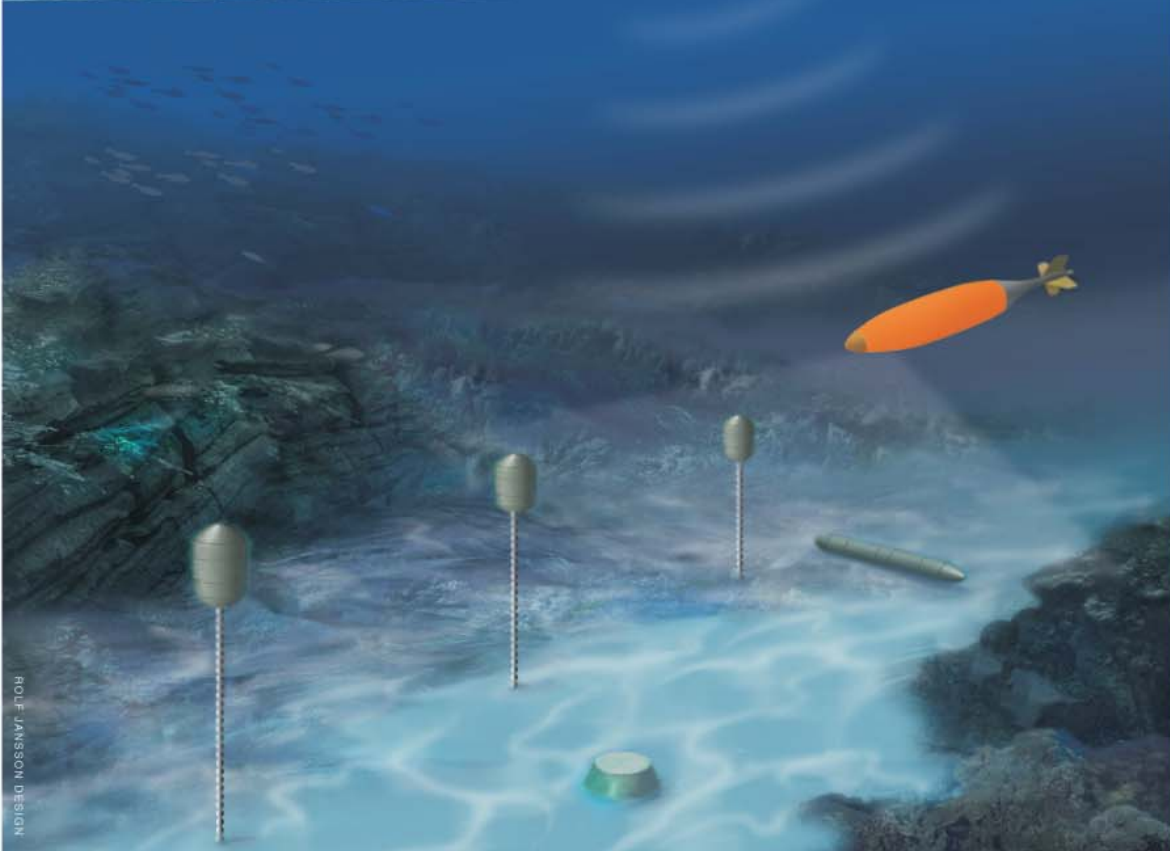
*HMS Roebuck*, extended in service following her success in Op TELIC is currently entering her extended repair period that will see her emerge next year fitted with an updated version of the EM1002 MBES fitted in *Echo* and *Enterprise*. Her survey motor boat is also being replaced with *SMB Nesbitt*, taken from the HM School, which has been fitted with an EM3002 MBES. This all adds up to a significant improvement in her data collection capability and places her very favourably to play a significant part in our campaign to gather environmental data. Prior to her repair period *Roebuck* had a successful short deployment to the eastern seaboard of the USA in support of Exercise Aurora conducting Rapid Environmental Assessment prior to amphibious operations.



# HUGIN 1000

## Autonomous Underwater Vehicle concept

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



ROBE JAMSSON DESIGN

Underwater instrumentation

▶ SONARS

▶ TELEMETRY

▶ POSITIONING

▶ HYDROGRAPHIC  
ECHO SOUNDERS

▶ CAMERAS AND  
LIGHTS

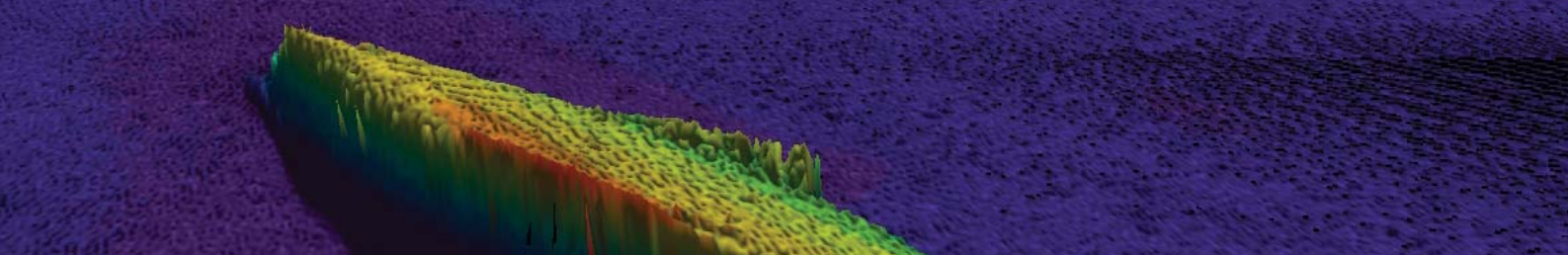
▶ AUTONOMOUS  
UNDERWATER VEHICLE

Norway: +47 33 03 41 00, USA: +1 713 934 8885  
Canada: +1 425 778 8821, UK: +44 1224 22 65 00  
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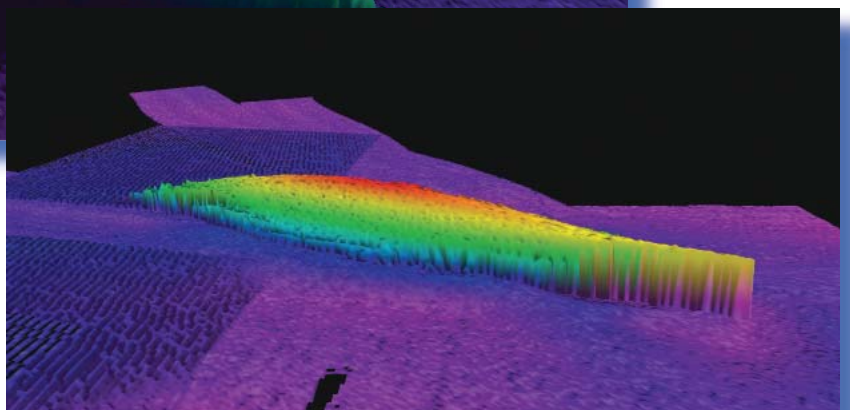
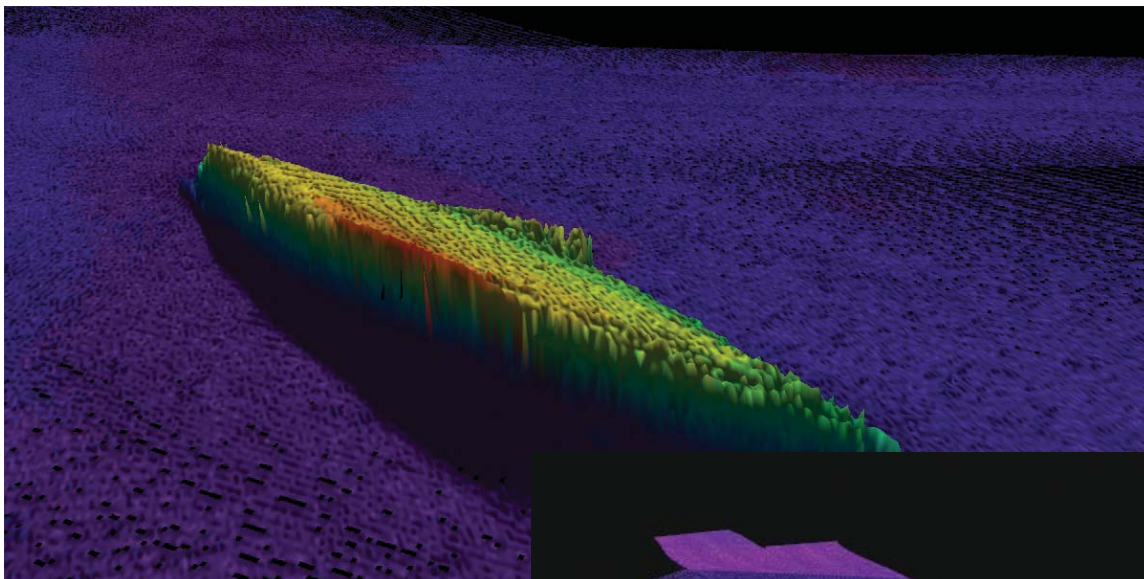


Once again, having achieved over 300 days available for sea in the past year, HMS Scott has made a rare appearance in Devonport to conduct a planned maintenance period and technical evaluation in the ship's nominal base port. She will also undertake a period of Operational Sea Training before returning to her Ocean Survey Programme. Although dogged by a number of mechanical defects Scott continues to offer a first rate level of availability gathering high quality ocean bathymetry. The ship sailed again in November to warmer and sunnier parts of the globe to continue where they left off in the Spring.

HMS Echo is on her first deployment and is at sea in the Arabian Gulf, operating at the sharp end. Gathering data in data sparse areas in a harsh environment is testing her team to the full. However as the personnel and systems bed in, they are more than rising to the challenge. Their deployment has been punctuated by taking part in Exercise Bersama Lima, a multinational Mines Countermeasures exercise off the Singaporean coast. During this exercise she achieved cross decking opportunities with the RNZN, RAN, and USN in addition to the host nation. En route to Singapore Echo achieved a quick look at the wrecks of the battleship Prince of Wales and the battle cruiser Repulse sunk by the Japanese in WWII.

HMS Enterprise, after a long wait due to propulsion issues, is now deployed in the Mediterranean. Again she has had full and gainful employment testing her skills in shallow water bathymetric data collection as well as oceanographic observations. Setting to work new equipment always comes with a management overhead, however once again an excellent team is rising to the challenge. Highlights have included taking part in the French Navy Fleet Review between Toulon and Nice in the summer and a visit to the Italian Hydrographic Office in Genoa.

The six Hydrographic and Meteorological teams attached to the Devonport Flotilla have been kept fully employed in Frigates and Destroyers across the world.

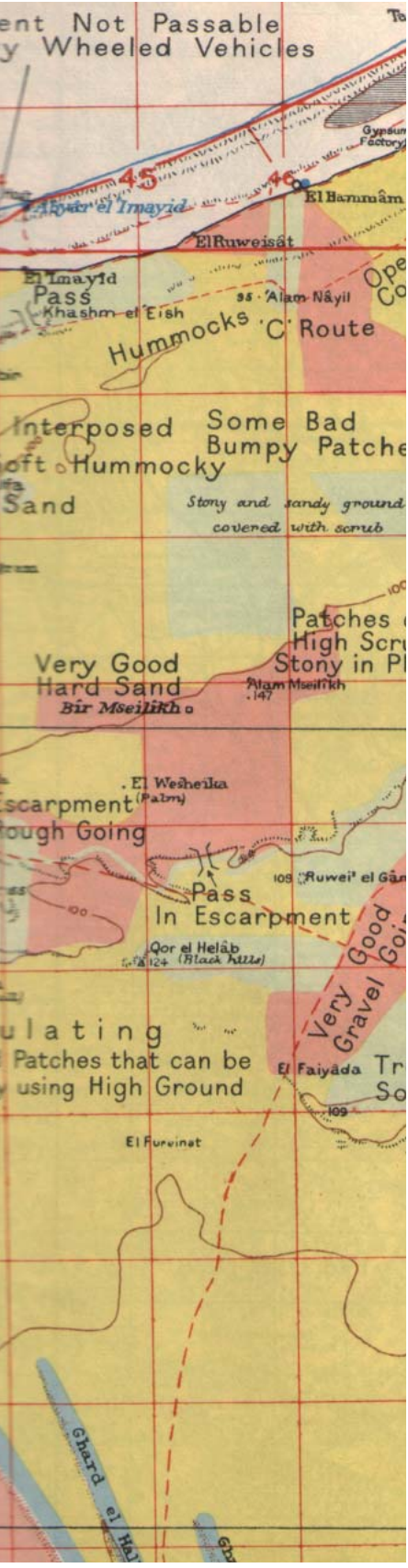


*Multibeam Echo Sounder image of HMS Prince of Wales (above) and HMS Repulse (right) lying on the seabed off the coast of Malaysia.*





# DESERT MEMORIES



A "Goings" map of the Western Desert

*By Donald Mills*

The article entitled "Rommel Foxed by Faked Map" by Brigadier RE Fryer which appeared in the Winter 2003 edition of the *Ranger* brought back memories of the World War 2 North African Campaign. I met the jovial Brigadier several times during those stirring days and I have great admiration for the trouble he took to maintain contact with Mid-East and Western Desert survey personnel who served there. In 1968 he sent me an 18-page list of officers, complete with names, addresses, units they served with and résumés of their subsequent occupations and retirement activities. In the last letter I received from him, dated 20th June 1969, he mentioned the planting of the dud "goings" map on the Germans before the battle of Alam Halfa.

My minor involvement in that battle resulted from an urgent request from a unit of 7th Armoured Division operating on the southern flank for maps further west when the enemy started to retreat. I was in charge of map distribution for the 8th Army at the time and as this delivery would involve the use of a sun compass I decided to make the delivery myself. After obtaining the required map reference from Headquarters 30 Corps I drove through a gap in the minefield at the base of Alam Halfa ridge which was guarded by a unit of 44th Division and set my course on the sun compass. Many deviations had to be made due to burnt-out tanks, gun quods and other vehicles, some still smouldering. There was plenty of air activity. Squadrons of Boston bombers heading for the battle area at frequent intervals and at one stage a dog fight between Messerschmitts and Spitfires.

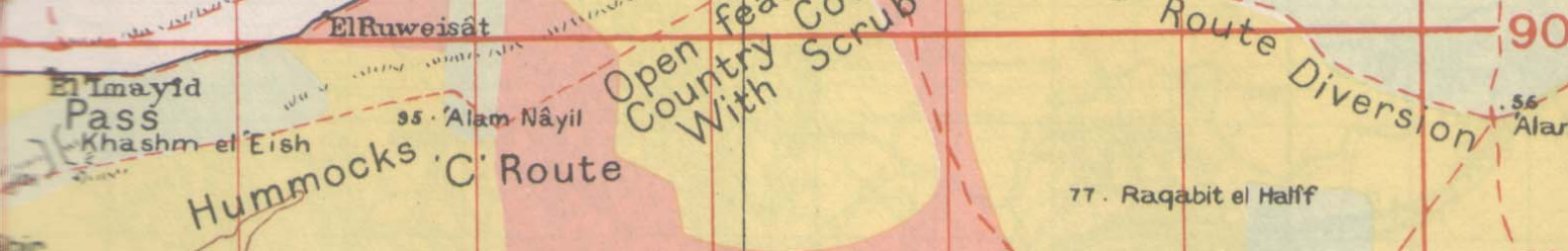
When I arrived at the given map reference the desert was bare. There were obvious signs of a campsite and vehicle tracks leading west which I followed and eventually found the unit which turned out to be the 9th Lancers (we called them the laundry boys because of their IXL shoulder badges). When they heard I was from Cape Town out came the whisky bottle and they insisted that I have a couple of drinks because they had been royally entertained there on their way around to the Middle East. On leaving I was warned that there might still be enemy patrols operating in the area I had to cross.

Through previous experience of desert travel I had learned to avoid gypsum deposits which showed up as white patches on the ground and had the consistency of talcum powder. On this return trip, however, I drove into one, probably due to the late afternoon sun reducing visibility. Strenuous effort to get the car onto firm ground were to no avail. Our survey vehicles carried metal sand tracks for this purpose but my station wagon was no so equipped. When my driver and I were about to abandon the station wagon and walk back to the Alam Halfa Ridge we noticed an armoured car petrol approaching. At first this worried me because the enemy had captured British vehicles of all sorts during the "Gazala Gallop". However the patrol turned out to be British and they soon towed us to firm ground.

By the time I found the gap in the minefield it was nearly dark and I was greeted with "Halt - give the password". This I did not know because I had neglected to ask for it when I left that morning. We were marched to the Battalion Commander at gun point and he showed great reluctance to believe my story. Not long before this two German spies had been captured wearing South African uniforms so he had reason to be suspicious. The Germans chose South African uniforms because the accent of an Afrikaner speaking English was similar to that of a German speaking English. I was treated as a prisoner until the Officer Commanding had contacted Corps Headquarters to check my bona fides. Eventually he released me with severe castigation for not reporting to him that morning and asking for the password.

Now I am going to digress a bit. On arriving in Cairo in October 1941 the officers and NCOs of our survey company were put on a crash course in astro-navigation. The intention was to attach small survey detachments to each of the mobile brigades and divisional headquarters of the 8th Army for the November 1941 push. The reason being that during Wavell's 1940 campaign, mobile units were often giving wrong map references to battle headquarters after each day's movements. In the forthcoming campaign, star fixes at nightly campsites would avoid such mistakes. The SA Survey Company (from April 1942: 46 Survey Company, SAEC) sent out eight such detachments, each comprising an officer and two NCOs.





The press room in Tura caves

During the day, apart from navigating when on the move, efforts were made to update “goings” maps and to check Trig beacons, etc. I was attached to 3rd SA Infantry Brigade and had an interesting time when preparing for the battle of Bardia which started on 31st December 1941. Amongst other duties I helped fixing gun positions for British, Polish and South African artillery units. Apart from updating maps, my detachment prepared plans to accompany the operation order for the battle. We had no copying machine, so each plan had to be separately drawn. We stayed up the whole of one night to achieve this.

A New Zealander named Gentil was mentioned in the article under discussion. Captain Charles Gentil later joined our mess at Headquarters 8th Army and we became good friends. Shortly after the battle of Wadi Akarit, Charles and I were sent on a mission to 1st Army Headquarters to liaise on survey intelligence matters and map exchanges. We drove up through the Kasserine Pass where Rommel’s Panzers had mauled the Americans - plenty of burnt-out tanks and vehicles. At 1st Army Headquarters we were invited to a mess for lunch. We were dressed in worn battle dress, open neck shirts and desert boots, whereas the other officers were clad in smartly -pressed battle dress, collar and tie, gaiters and polished boots - rather embarrassing but we were made to feel at home and fielded many questions about the desert campaign.

In the 8th Army, apart from the specialised work of artillery survey units, most survey tasks including map printing were shared by 512 and 514 Survey Company RE and 46 Survey Company SAEC so the personnel of these companies got to know each other reasonably well. It was the camaraderie built up in those days that prompted Brigadier Fryer to encourage post-war communication amongst the survey veterans.

I have written this letter to illustrate how this one article in the Ranger has evoked so many memories. The memories are still there, but sadly there are not many survivors to those exciting times to share them with.



Long Range Desert Group (photo: Tom Phillips)





# 135 INDEPENDENT GEOGRAPHIC SQUADRON RE (V) - Summary of activities since 1st January 2003

By Captain Brian Tennuci RE

*... ducking  
hoses and  
dodging  
Green  
Goddesses.*

The last two years have probably been the busiest and most exciting in the history of 135 Independent Geographic Squadron RE(V).

2003 got off to a 'fiery' start with the Squadron providing accommodation for a company of the Royal Welsh Fusiliers on OPERATION FRESCO – military support for the firemen's strike. Nevertheless, the Squadron continued to train whilst ducking hoses and dodging Green Goddesses.

Simultaneously, we had been warned that a troop of twelve personnel would be required to deploy to the Gulf on OPERATION TELIC 1, the official name for the conflict about to erupt in Iraq. The troop consisted of one officer, Lieutenant (now Captain) Drew Craig and eleven soldiers, which included one woman. They soon became known as 'Drew's Crew'. Following a rapid training course at Chilwell, the troop deployed to Iraq in February 2003 after an initial short spell of acclimatisation in Kuwait. Their task was to reinforce 14 Geographic Squadron RE and take on the responsibility of Geographic Information Dissemination (GID) - formerly known as map supply! Another two soldiers were deployed on OP TELIC 2 in June 2003. By August, thirteen had returned to the UK. The remaining volunteer returned on 21st December, just in time for Christmas.



*Major Peter Fisk handing over the family heirloom to  
Major Amanda Shell*

On 14th July 2003, Major Peter Fisk handed over command to Major Amanda Shell, thus keeping the unit in the family, as we are pleased to announce that they are to be married to each other, in June 2005.

Amanda immediately set about making preparations for OPERATION TRIG MED 03. This is an annual task normally carried out by our regular army colleagues in 42 Engineer Regiment (Geographic). Due to overstretch of the regular's manpower throughout the world, we were asked to take on the commitment for the second consecutive year and so elements of the Squadron deployed to Cyprus on 22nd September 2003. There are two British Sovereign Base Areas (SBAs) in Cyprus which, under a 1960 treaty, are required to be clearly marked with accurately positioned boundary posts (a total of 774). The integrity of the position of each post has to be checked and up to

50 each year need to be replaced, usually because some Cypriot farmer has 'borrowed' it; either to extend his own boundary or, because it looks nice in his back yard!

We held our usual Armistice Day Parade on Sunday the 9th of November. This was followed by the presentation of the Endeavour Award, by the Master of the Worshipful Company of Chartered Surveyors, Mr Edward Hartill OBE to Sapper (now LCpl) Ede for his achievements during deployments, both in Kosovo and Iraq. The Squadron Honorary Colonel, Sir Clive Martin, then continued to present various medals to other members of the Squadron.

After a well-earned Christmas break, the Squadron carried out a field training exercise (FTX) in muddy Minley during the weekend 7/8 February 2004. We hosted a number of visitors, including the Mayor of Epsom & Ewell, Councillor Jonathon Reed, a Burma Star veteran. He recently had an operation on his leg but this did not deter him and he manoeuvred around the training area in a wheelchair. As part of the 'exercise play' his official Rolls Royce was tactically hidden away, under an overhead camouflage net.



*Lt Col Mark Burrows presents WO2 John Thompson with his Afghanistan campaign medal*

During the visit, the Commanding Officer of 42 Engineer Regiment (Geographic), Lieutenant Colonel Mark Burrows presented the Afghanistan campaign medal to our QMSI, WO2 John Thompson.

Over the past few years, 135 Squadron has reinforced its role within the Geographic Engineer Group at Denison Barracks in Hermitage. Our unit carries out a great deal of training there especially within the Royal School of Military Survey, and it therefore seemed logical that we should adjust our recruiting sights to include the M4 corridor. To this end, the Squadron's 338 Troop moved to Denison Barracks where the Mayor of Newbury, Councillor Mike Rodger, formally opened this sub-unit on the 12th of July 2004.

On the 14th July, Sir Clive Martin ended his five-year tenure as the Squadron's Honorary Colonel. He was elected the Lord Mayor of London in November 2000 but despite the heavy schedule associated with that appointment, he has provided strong support and guidance throughout his tour. When visiting the unit in the field, he used to enjoy 'mucking in' with our activities. He was always an impressive figure during ceremonial occasions such as awarding presentations to our soldiers on Armistice Day. It was particularly apparent when he represented the Squadron during the celebrations of Her Majesty the Queen's Golden Jubilee celebrations when the unit exercised its right as Freemen to march through the streets of Epsom with colours flying, bayonets fixed and led by the Band of the Corps of Royal Engineers.



*Sir Clive, together with the Chief Royal Engineer and the Mayor of Epsom & Ewell – inspecting the Squadron on parade*

During his final weekend with the Squadron, Sir Clive and Lady Lindy visited the newly formed Hermitage Detachment. They both toured various recruiting stands that the unit had set up in Thatcham and Newbury. Later, they travelled to the Squadron's TA Centre in Ewell where the officers dined him out. He was presented with a Fougasse figurine and a handmade crystal claret jug by the Officers' Mess. The Sergeants' Mess supplied him with a bottle of vintage claret with which to christen it.

*... he used to enjoy  
'mucking in' with our ...*



Our new Honorary Colonel, Brigadier (Retired) Donald Wilson CBE, assumed his new role on 14th July 2004. After enlisting into the Corps of Royal Engineers and training at Sandhurst, he was commissioned into the Black Watch (Royal Highland Regiment) in 1968. His distinguished career culminated in June 2000 by being appointed Brigade Commander of 49 (East) Brigade. He held this post until his retirement in June 2003. During this period, he was Brigade Commander to six independent TA units, two OTCs and for two years, commanded the Specialist RLC TA, prior to their reorganisation. He wrote a report which was released in November 2003, entitled "Operation TELIC

*... distinguished  
career culminated ...*

Mobilisation Data Analysis Project" for the Director of Army Staff Duties. This report focussed on TA & Reserves mobilisation issues.

It is this relevant experience and commitment to the TA that makes him an ideal choice for this appointment, particularly at this point of time during the changes that are to take place as a result of the current 'Future Army Structure' (FAS) studies. More about those, in a moment! We predict that he will be a strong source of advice for TA recruiting strategies, TA officers' careers and development and TA mobilisation issues. The new Honorary Colonel made his first official visit to the Squadron during a Watermanship Training Weekend, held at the Wyke Regis RE Training Camp on Saturday 21st August.



*The new Honorary Colonel, Brigadier Donald Wilson with QMSI Lindsey (Watermanship Instructor: 78 Engr Regt RE(V)) and the OC*

The quality of training at '135' has always been strongly influenced by the tireless efforts of our two regular stalwarts. QMSI John Thompson MBE has been with us for two years now and has worked hard to drive the new TA Military Engineer (Volunteer) Geographic employment qualification forward or - for ease of expression after the fourth pint! - ME (V) Geo. He has been selected for a SSM post at the Army Training Regiment, Basingbourne. He will stay with us until he starts the new job in June 2005.

It seems we have been harder on our other regular appointment, that of Geographic Staff Officer/Quartermaster. Captain Alan Easingwood left us on 19th April to become the Assistant Instructor, Terrain Analysis at the RSMS. He was replaced by Stuart Fairmington who promptly left us two months later! In fact, this was due to Stuart being selected for the Army Survey Course; a tremendous achievement and opportunity for a late entry officer. On 23rd August, we welcomed Captain 'Scouse' Murray and we look forward to



*The Squadron team in the raft building race at Wyke Regis*



*Sir Clive Martin helping LCpl Chef Gamish Kunaratnum prepare lunch - when the chips were down*

his tour with us.

On a final note, readers may be interested to learn that a Paper has recently been published by the Army Policy & Resources Committee (APRC) that explores policy issues of how the TA should progress within the current FAS Study. This paper examines the shape and future roles of the TA in the next 10-15 years. It is fairly lengthy, however, the following list identifies, in no particular order, some of the principles concerned:

- \* TA units to be integrated within regular army units, with the same role.

- \* Radical re-interpretation of the Reserves Forces Act 1996 (RFA 96). This is to include recognition of the balance required for the volunteer to balance the expectations of the military, family aspirations and civilian employment requirements. Employer support is being enhanced.

- \* A recommended revised mission statement for the TA. ***“The TA is to contribute to the UK’s military capability, both deployed overseas and within the UK, whilst maintaining and developing links within society and with the local community”.***

- \* The TA will provide a Civil Contingency Reaction Force (CCRF) for home operations.
- \* Training, both individual and collective, is to be reviewed. TA officers and soldiers are to pass similar courses as regular counterparts; especially for promotion.
- \* Readiness states, already moved forward out of necessity by OP TELIC, are to expect the TA to move at shorter notice.
- \* Force Generation (Project FORGE). This is the process that will enable HQ LAND to accurately assess capability and readiness; better manage training to improve capability; identify forces to meet operational requirements and cost outputs. It is also concerned with recruiting strategies and will be managed using new IT systems, common to all regular and TA units.
- \* The Army Welfare Service is to continue to extend services to injured volunteers and for the families of mobilised soldiers.

*... when the chips were down .....*



- \* Some allowances previously available only to regulars are to be extended to mobilised TA personnel. Further study is to be made regarding pensions for specific periods of full time service.
- \* The nature of when it is appropriate to use the TA is to be established. Military Aid to the Civil Authorities (MACA) tasks in the UK, for example may be inappropriate, especially in such cases as the provision of firefighters during disputes, which could result in conflict within local communities.

The Squadron generally welcomes these principles. Many have already been achieved in advance of this publication due to the full absorption of the unit within 42 Engineer Regiment (Geographic) and the tremendous support that we continue to receive from all the elements of the Geographic Engineer Group.

So, what's next? A draft role review has been prepared, contingent on the FAS study findings. We have broadened our recruiting target area along the M4 corridor from London to Newbury (See you at the Newbury Show). In October, we are assisting 14 Geographic Squadron RE in Germany on Exercise ARCADE FUSION and then a short break at Christmas before we face the new challenges of 2005.



*All round defence for the Mayor and his Rolls*

# COMBINED OPERATIONS MAPPING / HYDROGRAPHIC SURVEYING SYMPOSIUM 2004

Saturday the 5th of June saw 100 or so people converge on the National Maritime Museum at Greenwich to attend a joint Defence Surveyors' Association/British Cartographic Society seminar on mapping and hydrographic charting for Combined Operations. The event marked the 60th Anniversary of D-Day and provided a fascinating insight into the immense efforts of the Royal Navy Hydrographic Service and Military Survey to ensure that the best and most up-to-date hydrographic and geographic materials were available to the invasion forces.

Presenters stuck rigidly to their 20-minute slot and so we had crisp, individually styled packets of information, each giving a view of the subject from a different aspect. The day told the story of the development of the Chartmap, a combination of hydrographic chart and topographical map which is not easy to achieve as charts and maps are very different things as regards geodetic basis, content, style and purpose.

We heard that the genesis of the Chartmap lay in the Gallipoli campaign but that, as in many other cases, the idea was not developed between the wars and they did not appear again until the invasion of Sicily. However, it was the invasion of Normandy that saw very considerable effort resulting in the production of several series of chartmaps at different scales. There were two presentations that brought to the fore subjects that are not generally considered. Dr Alastair Pearson from the University of Portsmouth gave a fascinating account of the production of terrain models as briefing and mission practise aids, very much the forerunner of the terrain visualisation software of today. Christopher Hunt from the Imperial War Museum showed us the reverse of the coin when he displayed the captured German Daily Situation Maps that are in the museum's archives. Here was absolute proof of the success of the complex deception plan that encouraged the Germans to believe that the real invasion would be in the Pas de Calais area. The maps also showed how very little they knew of the Allies actual strength and dispositions – all their intelligence and guesswork was thankfully wrong.

Just before lunch the DSA President, Major General Eric Barton presented the Royal Navy and Military Geographic Annual prizes for 2003 to Lieutenant Commander Colin Thompson and Major Percy Kimber respectively.

In the afternoon we experienced one of the benefits of DSA membership in that we were given two excellent first-hand presentations on the hydrographic and geographic support provided last year for the operation in Iraq. Captain Ian Turner RN read the skipper of *HMS Roebuck's* account of the valuable surveying carried out by that ship before, during and after the conflict and Lieutenant Colonel John Kedar, CO of 42 Engineer Regiment (Geographic) and Chief Geographic Officer for OPERATION TELIC at the time, told us of the work and products that ensured a very high level of geographic data and advice was on-hand to the commanders in the field. Both presentations were extremely well illustrated and we saw examples of today's version of the Chartmap – the fusion of hydrographic and geographic data in the deployed computer systems.

In all, a fascinating day due in no small part to the efforts of the DSA and several of its members.

*Alan Gordon*

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## Postscript to the D-Day Special Edition

Mike Nolan has come across a fascinating map that will be featured in the next issue of *Ranger*. The map is a German 1:25,000 scale sheet reprinted with German marginalia from a Benson (GSGS 4347) sheet that was presumably captured by the Germans and reprinted after 6th June 1944. More on this unique map in the next issue. It fell into British hands on the 19th June 1944.

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## END OF THE CANBERRA PR9

March 2006 will finally see the Canberra PR9 retire from RAF service. To mark the occasion there is to be a series of events at RAF Marham including one to commemorate ASLS role. It is known that at least six former officers commanding ASLS are members of the DSA. *Ranger* will publish details of the event as they become known but to register your interest please contact WO2(QMSI) Simmonds on 01760 337 261 or email peter.simmonds@marham.raf.mod.uk.



# GEO PEOPLE



## **BRIGADIER R N RIGBY (Late RE)**

### ***Director of Defence Intelligence Joint Environment***

Colonel Nick Rigby joined the Army in February 1977 after gaining a BSc in Geography from Kings, London and was commissioned into the Royal Engineers. After undertaking a short detachment to 42 Survey Engineer Regiment he completed his Royal Engineers Young Officer course at the Royal School of Military Engineering, Chatham in 1978.

In 1979, he became a Field Troop Commander within 19 Geodetic Squadron RE where he supervised geodetic field surveys in the UK, Kenya and Cyprus. He was posted in 1980 to 512 Specialist Team, Royal Engineers, based in Washington DC where he undertook worldwide surveys in a host of countries including the Eastern Seaboard of the USA, Bahrain, Cyprus, Fiji, Vanuatu and the Ivory Coast. Following these surveys, he then served as an SO3 for two years (1981 - 83) in the Geographic Branch of HQ BAOR where he was responsible for establishments, manning and varying Geographic policy and requirements. He was subsequently posted in 1983 to the School of Military Survey where he attended 69 Army Survey Course.

In 1984 he was posted to 13 Map Production Squadron RE in Barton Stacey where he undertook a 2-year tour as Squadron Second in Command within 42 Survey Engineer Regiment. During this time he witnessed the Regiment reforming into a Group and being moved to its current site at Hermitage. He also had the privilege of seeing his Squadron Headquarters go up in flames during an unfortunate accident, losing everything but an Army watch and his disfigured telephone! In 1987 he completed No 21 Army Staff College course before being posted to the Directorate of Military Survey at Feltham for a 2-year staff tour. In 1990 he assumed command of 14 Independent Topographic Squadron RE based in Düsseldorf, Germany, with a sojourn to Saudi Arabia and Kuwait to help sort out a local boundary issue with the Iraqis. Between 1992 and 1994 he was then posted to the USA as the Defense Mapping Agency Liaison Officer (now National Geospatial-Intelligence Agency - NGA) where he helped with the introduction into Military Survey of a large digital mapping system known as PETROS. He also worked closely with the US Army Corps of Engineers.

During the period 1994 – 1997, on promotion to Lieutenant Colonel, he became the Chief Geographic Officer within the British-led HQ Allied Rapid Reaction Corps based in Rheindahlen, Germany, although this was interrupted in 1996 with 12 months in Sarajevo implementing the Dayton Peace Agreement. In 1997 he was posted back to the MoD in London as a staff officer in Operational Requirements (now DEC (ISTAR)) where he was responsible for defence imagery and geographic systems. Nick then spent a short period of time as ADI Geographic within the Defence Intelligence Staff before taking up the appointment in April 2000 as Commander of the Geographic Engineer Group, on promotion, within the newly formed Defence Geographic and Imagery Intelligence Agency (DGIA). In August 2002 after two years languishing in Berkshire (and other parts of the world), he was posted back from whence he came – Defence Intelligence, into the rotational post of ADI Geographic, Imagery and MASINT. Nick has now, on promotion to Brigadier, become Director of Defence Intelligence Joint Environment (DI JE).

He is married to Karen and has three daughters, who each have varying levels of access to his bank account, some with total success and one still trying! Chester, a Cocker Spaniel, provides the essential male companionship in the family. He (not Chester) enjoys and supports most sports, especially his beloved Bolton Wanderers Football Club and Northampton Rugby Football Club, and is a particularly keen runner (with Chester). When not supporting his daughters' tennis, hockey and netball matches from the side-lines, he can be found in his secondary occupation, of taxi driver (unpaid!).



## **COMMANDER JJ FAULKNER MRICS ROYAL NAVY**

### ***Commander Hydrography Meteorology***

Jeff Faulkner was born in Mombasa and joined the Royal Navy in 1979.

He completed general Seaman Officer training in HM ships *Birmingham* and *Hecate* and after an appointment to *HMS Hydra*, attended the Basic Hydrographic Course in 1981. Early appointments included *HMS Herald* operating in the Indian Ocean and as a hospital ship during the Falklands conflict, *HMS Echo* as Executive Officer, *HMS Hecla* as Geophysical Officer for mid-Atlantic surveys and *HMS Roebuck*.

In 1988, on completion of the Hydrographic Officers' Long Course, he was appointed to *HMS Tamar*, in Hong Kong, as Assistant Staff Operations Officer, which included the rôle of Royal Naval ADC to the Governor. Upon returning he was appointed to *HMS Herald* as Operations and Navigating Officer for Operation Granby. During this period he conceived the process of interfacing satellite navigation data to the action information computer fitted in the mine countermeasures vessels. This innovation had a major effect on the success of their mine hunting operations off the Kuwaiti coast. In 1993 he was appointed in command of *HMSML Gleaner* surveying in Scottish waters after which he took up the post of Senior Instructor at the Royal Naval Hydrographic School, was advanced to Charge Surveyor and became an Associate of the Royal Institute of

Chartered Surveyors. He took command of *HMS Beagle* in early 1997 and was involved in surveys and exercises in UK waters followed by an appointment as Executive Officer in *HMS Scott*.

Thereafter appointments include DNSOM Equipment Manager within the MOD and Head of Defence Services and Surveying at the United Kingdom Hydrographic Office. In 2002 he took command of the RN Hydrography Meteorology School and oversaw the collocation of hydrographic and meteorological schools at *HMS Drake* in the form of the Maritime Warfare School Hydrography Meteorology Training Group. His current appointment is Commander HM within the Devonport Flotilla, a wide-ranging remit that centres on the HM Ships and mobile HM Teams.

Jeff lives in Tavistock, Devon, with his wife Carol and their two teenage sons, Jonathan and Julian. He is a keen surfer who has an interest in a variety of sports including skiing, cricket and sailing.



**PHILIP VERITY BSc(Hons), CEng, FIEE**

*Sales and Marketing Manager*

*Ultra Electronics Command & Control Systems Division.*

As a civilian and a non-surveyor it is somewhat strange to be writing in this magazine when I so obviously fail on two of the three words: Defence Surveyors Association. While as a DSA member I enjoy RANGER, I have few qualifications (O level geography and RYA Navigation not withstanding) to warrant my appearance, especially when compared with my predecessors in this spot. My inclusion says much for the persuasiveness of the editor!

After four years reading Engineering I left university to join Plessey developing and flight trialing radar plot extractors for the RAF. Marriage to Ruth made a house a necessity; a mortgage essential; and a move to a small consultancy the funding method. After three hectic years making computers perform above and beyond their manufacturers design, for both government and research customers, Plessey tempted me back to lead the computer design team for two large export air defence systems.

Following successful delivery, I made my first acquaintance with the army customer as engineering manager for the Wavell and Ptarmigan display systems. Our assigned 8 man military advice team of majors and warrant officers was a constant source of engaging stories and guidance; with (and occasionally despite) their involvement our nuclear hardened and tempest proof systems were accepted into service.

Promotion followed as manager of the Air Traffic Control and Air Defence Group providing systems to the RAF, NATS, NATO ACCS, and one for the US airborne command post. I was seconded to the EASAMS team to consult on the ADCIS bid and on my return I spent 20 months managing the careers and professional development of 300 engineers.

Following the GEC take-over I was assigned to the rationalisation and restructuring programme culminating in several site closures; a sad but inevitable result of reduced defence expenditure. On passing the selection for Business Planning Manager I moved away from people management and into Strategy and Market Intelligence. Working for the Sales Director, thus began my initiation into the mysteries and arts of sales and marketing.

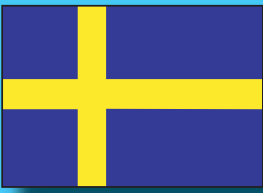
The ever acquisitive GEC bought Ferranti and following due diligence I prepared the integration plan (in 4 days) closing two operations and relocating both to a third site. I was appointed acting Sales Director at Addlestone following a reorganisation, and in that role helped merge into the GEC business at Frimley. Here I spent a further four years as the Assistant Sales Director, working on improvements to Bids and Proposals and introduced the Winning Business process.

On moving to Ultra to manage the Sales & Marketing team, I immediately met up with the Geographic Engineering Group; and over the following convivial lunch, for which I was allowed to pay, we agreed to enhance the relationship. This was realised in a joint development team to exploit the benefits of commercial information technology; business processes; and adjacent military programmes, in the better delivery of the geo-groups assignments. The relationship continues as we support the equipment towards its next generation.

Since that time my interests have broadened to cover what is now ISTAR and Battlespace, where I am constantly looking at new ways for Ultra to develop into this emerging defence arena.

We used the hell that is the M25 as the catalyst to move from Surrey to a delightful village some 165 metres up on top of the Chiltern Hills. (The sole geographic information in this article.) Here we are gradually attempting to walk the vast number of Buckinghamshire footpaths and by-ways while discovering country pubs, and generally enjoying this area of outstanding natural beauty.





## A SWEDISH EXPERIENCE



*By Major Phil Maye RE*

In the summer of 2002 Maria and I were looking forward to a NATO posting to Heidelberg when it was announced that the post had been cut. Whilst looking around for a suitable alternative, phone calls were made to Sweden to determine whether earlier discussions, between the Swedish Military Geographic Service and DGIA, about a one-way attachment could be promulgated. This was met with much enthusiasm by Lieutenant Colonel Lennart Bergh and Commander Jan Bengtsson thus, in October 2002, we were on the ferry from Newcastle to Gothenburg and making our way to Stockholm that was to be home for next 12 months.



*Lt Cdr Leif Sundgren, Head of the Geographic Information Support Establishment (Geo SE) and now chairman of the Digital Geographic Information Working Group (DGIWG).*

The Swedish Geographic Information Support Establishment (Geo SE) was established in 2000 for the provision of digital geospatial data to a disparate range of military systems across its Armed Forces. Its staff of 18, comprising mainly civilian personnel, had previously been employed in the GIS Centre of Lantmäteriet, the Swedish National Land Survey organization. The head of establishment, Leif Sundgren, a Lieutenant Commander on a 6-year leave of absence from the Navy, had been a student on 84 Army Survey Course at Hermitage in 1998/99. The establishment had four military officer posts, one each from the Army, Navy and Air Force and I was to fill the fourth post as its International Geographic Officer. The Swedish Military Service was by no means a new organization; whilst the UK Military Survey recently celebrated its 250th anniversary the Swedes had just celebrated their 375th anniversary!

It was a timely appointment as just three weeks prior to my arrival it was announced that Sweden, in coalition with Finland, was to be the lead nation at the Multi National Brigade headquarters in Pristina, Kosovo from May 2003. With knowledge of my imminent arrival Lieutenant Colonel Bergh offered to provide a geographic support team to replace the UK personnel. I was to hit the ground running, provision of deployable geographic support, from concept to delivery, in six months! Within two weeks of arrival a series of briefings and reports had to be delivered to very senior staff in the Armed Forces Headquarters, detailing the concept, capability and providing the business case for hardware and software procurement, training, et al. The novelty of being the only British officer attached to the Swedish Armed Forces headquarters, in fact the only foreign officer, had its advantages and speaking in English ensured that they listened very carefully!



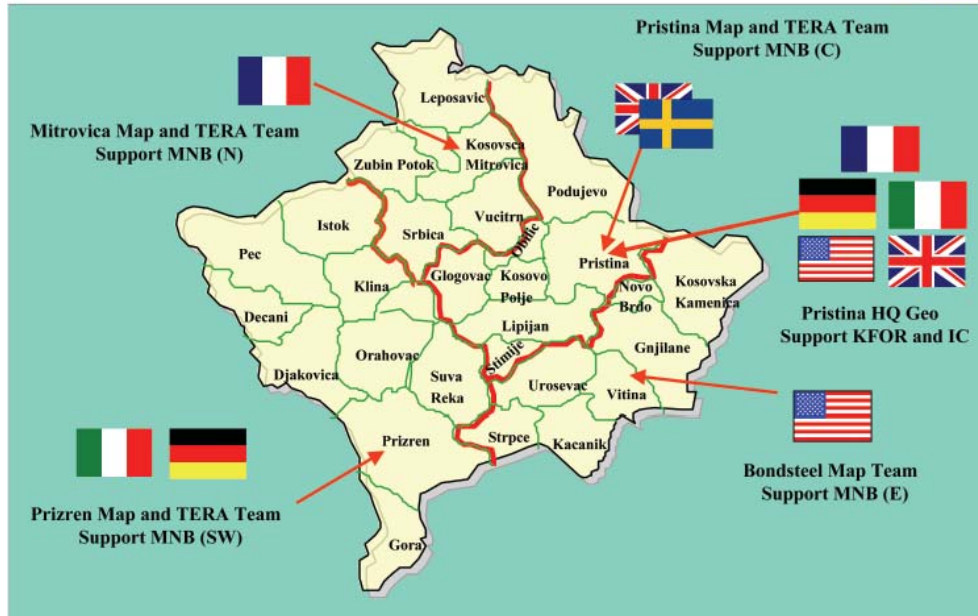
*Major Phil Maye RE, MSc, FRGS, AFRIN*

As the winter days closed in, with just 6 hours of daylight from 9 till 3, the temperature constantly well below zero, the lakes froze over, the snow fell and out came the skis and the ice skates. The lakes became vast ice rinks and golf courses provided ski trails that were actively enjoyed by all.

By December, I had the financial authority to purchase equipment and software replicating the UK capabilities, now it was time to consider the manning and training of geographic specialists. The Swedish Armed Forces has a cadre of career officers and a conscript army that, until recently, could raise 850,000 in a very short timeframe to defend its country. The conscript process is still in place and for international missions it advertises the posts to be filled, with 4 or 5 times the number required applying for the posts. Thus it transpired that finding suitable soldiers with GIS experience was not a difficult task.

In January 2003 a 2-week trip to Kosovo on a fact-finding mission identified all the tasks to be accomplished; running the map store, production task management and meeting other Brigade Geo Support teams from France, Germany, Italy and USA. This trip provided all the material required to design a 5-week training package to be undertaken in March and April. Assistance was also provided by Royal School of Military Survey instructors to help train the military aspects of geographic support that went beyond the classroom in the centre of

# GEO IN KOSOVO



Stockholm, both student and instructor learning from the experience! Instruction completed, equipment packed and dispatched, a seamless transition from UK to Sweden occurred in late April 2003.

During these first six months the additional joys of being the International Geographic officer meant that there were also trips to Finland to brief the incoming multi-national brigade staff, to a Swedish ESRI conference to spread the word about Swedish deployable geographic support and a trip to Madrid as a Swedish representative at the EU Military (Geo) conference. Another trip to Kosovo confirms that all is going well and the Swedish have really integrated with the other nation's Geo teams by exchanging personnel for 3-5 days at a time. This was followed by a trip to Brussels, for the NATO Geographic Conference, again as a Swedish representative, before returning to Sweden.

The latter months also saw the advance of longer days, the snow disappeared and everything became very, very green under blue skies. Sailboats are back on the water and navigating the 20,000 islands that make up the Archipelago. Tourists flock to Stockholm to visit the Vasa museum (Swedish equivalent of the Mary Rose, but much better) and Skansen, the national heritage park. Midsummer weekend, Maria and I fly north of the Arctic Circle to Kiruna to experience the midnight sun, visit the ice hotel (refrigerated) and take the train to Narvik.

The year-long attachment is not all one-way, there is international recognition that Sweden has gained considerable momentum in data fusion, web-services and delivery of digital geospatial data. It collaborates very well with its national data providers as well as with industry. The Swedish Military Geographic Service has developed with ESRI a suite of programs under the general name of GeoPres ([www.geopres.mil.se](http://www.geopres.mil.se)). GIS for International Missions (GIS IM) is one such program, it incorporates an extension to ArcView 3.2 that is now widely used in Swedish Defence to view digital data, interact with Garmin GPS and provides tools to add themes to underlying digital datasets. It is very popular and used extensively on operations.

Since 1995, the Lantmateriet GIS-Centre has participated in a study for the Swedish Armed Forces called GeoDataStudy (GDS). This study has developed a method to describe requirements for geographical data for every military system. This has led to the development of an intranet-based geographic presentation system, the GeoWeb project. It is a server-based system, where the end-user uses a browser to retrieve the maps. The initial goal is to create a



viewer with limited functionality, the user to have the ability to create a map of their choice, be able to zoom and pan, add layers, cut and paste or print the map. Further goals are to increase the functionality to include military symbols, adding an analysis capability, etc. and seeks to include the ability to retrieve and qualify data from the user, such as military geographic information collected in the field. The GeoWeb concept is to take this even further so that prescribed processes can extract the relevant data from available datasets, process them in accordance to the customers requirement and deliver this product, complete with metadata. Processes will become automated and method of delivery may in the near future be served electronically directly to the customer.

The increased usage and provision of digital data, together with a now-established deployable geographic support capability, has led to an increase in manpower within Geo SE from 18 to 34 personnel. Prior to completing my tour a second team was trained and deployed to Kosovo and during 2004 a Swedish Geo team has deployed with Ireland to Liberia. Personnel returning from Kosovo have also been retained at Geo SE to support the deployed teams and to provide a Rapid Response capability in Sweden. It is an extremely satisfying legacy that was achieved in such a short time period.

The National Land Survey (NLS) also has a group of personnel that belong to a **Defence Surveyors Association** called 'Försvarsmaktslantmätare'. It comprises 35 civilian employees of NLS that are responsible for liaison, advice and providing geographic assistance to military units all over Sweden. A presentation on deployable geographic support identified the possibility of providing additional training, distributing and supporting GIS IM more widely (Sweden has several hundred licences that resulted from its development).

The Swedish Military Geographic Service (policy) and Geo SE (production and dissemination) are both small proactive organisations working in very good partnership with its national counterparts. Collectively the technical aspirations are being achieved through continual dialogue and shared development both nationally as well as internationally through standardisation working groups and committees. Development with commercial vendors such as ESRI have also ensured the success of military products and applications whilst proving cost effective in terms of license agreements. Geographic Support also continues to be the foundation of future military command and control innovations such as Network Based Defence.

These initiatives have enabled the Swedish Armed Forces to provide a small but highly effective contribution to the International military community.

The Swedish were such excellent hosts, their English is impeccable, and there is much to commend about its people, country, transport system and cleanliness. All too soon it was time to depart, everyone was much richer, in knowledge, from the experience.



# ELEPHANTS AND THE (NOT SO) FLAT EARTH

By 'MapMaker'

One of the vagaries of human nature is the ability to remember trivialities - no matter how relevant, or irrelevant, they are - they stick forever. I recall quite vividly my introduction in the 1960s to jungle survival at the Jungle Warfare School in Malaya. In those days every member of the Army (even surveyors!) posted to this part of the World had to attend. It was several days into the course when we were taking a rest in a clearing in the 'Ulu' (the local 'knees brown' term for the jungle) when our instructor took the opportunity to reiterate some Do's and Don'ts when moving in secondary jungle. He concluded by asking; 'What do you do if chased by an elephant?' At which we all scoffed at this absurd question, I mean, elephants on a jungle mountainside! But how wrong we were! Within a few hours we met our first real live elephant rummaging around the undergrowth. Oh, and the answer is of course, 'run downhill'.

This leads me on to a little ditty that occurred about this time in Malaya. Our jungle-busting field surveyors were completing a gravity survey in this part of the World (something to do with determining the 'Deviation of the Vertical'). Those in the know will realise that this requires the use of a very expensive and very delicate instrument known, curiously enough, as a Gravimeter. Because of these special characteristics there were very few around - especially in the Far East. Our Survey Squadron was fortunate in having two of these bits of kit and one was always kept securely in reserve in the Quartermaster's store.

The story goes that our chaps were nearing the completion of the survey and were looking for a likely area to site their Gravimeter. By chance they came across a long-ish, flat-ish clearing in the jungle which appeared to be an ideal spot to set up this sensitive instrument. Now again, the Field Surveyors amongst our readers will know that it takes several days to obtain a decent set of gravity readings to assist in the map preparation process. So, having set up the Gravimeter, they moved away a little to make camp and complete some outstanding mathematical chores. Our man, left to guard this (then) product of modern science, was also away from the site answering the call of nature when a huge crashing sound was heard nearby. Rushing back to the site, to his horror, he was confronted with an instrument about half of its original height and not quite in working order. And it did not require the powers of a rocket scientist to realise that the cause was several clumsy elephants, treading on the thing, on their way to the local watering hole.

The Sergeant in charge had little option but to signal the Squadron with the message: 'Gravimeter rendered inoperable by passing elephants - please send reserve instrument to complete survey'. Now as you all know all Quartermasters are, by nature, extremely suspicious creatures and their training specifically tells them that all stores are for storing and belong to them personally, on behalf of the Monarch. New to the Far East, our Quartermaster, on reading the signal, immediately 'smelt a rat'. How dare this upstart of a Sergeant give **him** such a ridiculous excuse for what was an obvious misuse of one of **his** most precious possessions. Without pausing for breath he sent by return a signal, the essence of which proclaimed: 'What do you take me for - pull the other one - polar bears in Singapore next - and if it was an elephant (Ho, Ho) sent me proof directly!'

Now the Sergeant, not being quite the upstart that was thought, found the proof and, as instructed, sent it directly to the Quartermaster. The boxed proof duly arrived and found its way to the Quartermaster's desk. On opening the box he was presented with a very large, dry elephant dropping accompanied by a polite note requesting analysis. The spare Gravimeter arrived on site a few days later.

*... all stores are for ..... polar  
bears in Singapore .....*



# SAVING *HMS WHIMBREL* A MEMORIAL TO THE BATTLE OF THE ATLANTIC

First commissioned in January 1943 and a one time member of the legendary Captain Johnnie Walker's Second Escort Group, the Black Swan class sloop *HMS Whimbrel* is now one of just a handful of vessels that can lay claim to having fought in the Battle of the Atlantic, perhaps the most crucial campaign of the Second World War. Now laid up in an Egyptian dockyard after some sixty years service, *Whimbrel* is now the focus of a preservation project that aims to return her to the UK as the centrepiece of a memorial to the struggle in the Atlantic.

The project's ambition is to create a national memorial that will "*recognise the importance of the Battle of the Atlantic in our country's history and commemorate the sacrifices made by those involved.*" Its main aim will be to record the contribution of the sailors, from both the Royal and Merchant Navy, who gave so much to ensure the United Kingdom's freedom during the Second World War. *Whimbrel* is well suited to act as the memorial's focal point, not least because she remains in close to her original wartime condition and therefore forms a virtual time capsule of life at sea during that period. The project will be based in Liverpool, reflecting the City's role as Atlantic campaign headquarters. A berth in the Canning Dock, conveniently located between the city's commercial centre and Albert Dock leisure and retail complex, has already been identified.

The possibility of securing *Whimbrel's* preservation owes much to the foresight of the Egyptian Navy, with which she enjoyed a long and distinguished career from her disposal by the Royal Navy in 1949 until retirement from her final role as a static training ship early in 2002. Upon formation of an embryonic project team to investigate the ship's return, the first priority was to obtain access so as to establish her structural condition, a process with which the Egyptian authorities proved very cooperative. These efforts culminated in a preliminary structural examination by the project's surveyor in February 2003. This indicated that whilst *Whimbrel* was in generally sound condition, specific areas of corrosion in her lower hull needed major attention. As a result, it was determined that the best way forward would be to negotiate a package combining initial refurbishment in an Egyptian dockyard with the ship's purchase. This took much patient discussion on both sides and it was only in November 2003 that a draft agreement was reached. The cost of this package will total £1m, the deal being subject to the ability to obtain funding within a reasonable timeframe.

The time that elapsed during these negotiations was spent developing the project team, particularly as it was recognised that establishing professional, effective management from the outset was essential for ultimate success. Overall leadership is in the hands of steering group head Vice Admiral Michael Gretton, currently the Director of The Duke of Edinburgh's Award and son of the late Vice Admiral Sir Peter Gretton (one of the most distinguished escort commanders of the Atlantic Campaign). Reporting to him is a project management team directed by Captain Chris Pile, RN and including personnel providing a good base of technical, accounting, PR, fundraising and historical expertise. Day to day implementation of the project's initial stages will be outsourced to specialist consultants with previous experience of similar schemes.

*HMS Whimbrel now afloat at Alexandria.  
Photographs by Ralph Edwards*





*HMS Whimbrel during sea trials January 1943. Crown copyright ©*

Given the considerable obstacles facing any major maritime preservation scheme, the plan is to adopt a step by step approach, dividing the project into a number of distinct, manageable stages. These will culminate in the ship's dedication as the Nation's Battle of the Atlantic Memorial in 2008, the year when Liverpool will become Europe's Capital of Culture. In the more immediate future, the most pressing need is to undertake more detailed survey and associated project feasibility studies in Alexandria, as these will determine the project's ongoing business and conservation plans, as well as the precise terms of the final refurbishment contract signed with the Egyptian authorities. Obtaining funding for the c. £40,000 cost of this work is now close to being finalised and it is hoped that the on site programme will be concluded before Christmas.



Obviously, the project will not be completed without very large amounts of financial support, with the total cost of acquisition, initial refurbishment and return to the UK currently estimated in the order of £2m. Given the amount involved, fundraising efforts have been targeted on a relatively small number of major potential benefactors and, whilst much remains to be done, some headway is being made. Charitable registration is being actively pursued as part of these efforts and limited company status should be obtained shortly. The project has also benefited from a number of spontaneous offers of financial and non financial assistance which have done much both to pay for the c. £10,000 of ongoing preparatory work that has already been carried out and to bring useful technical expertise to the project. All offers of assistance are carefully recorded so that requests for help can be made when a specific need arises.

Anybody wanting more details about the HMS Whimbrel (1942-49), Battle of the Atlantic Memorial project should contact Conrad Waters, Public Relations Officer at Two Beeches, Tilford Road, Hindhead, Surrey GU26 6RA, Tel: 01428 605634, E-mail: [conrad.waters@btopenworld.com](mailto:conrad.waters@btopenworld.com).



# ENGINEER SURVEYING IN THE GULF

*By Staff Sergeant Ritchie Williams RE*

For many years now the Surveyor Engineering trade has ostensibly been considered a 'black art'. Many other tradesmen within the Corps of Royal Engineers and indeed agencies from outside are unaware of the extensive capabilities of the modern Engineering Surveyor.



*In-theatre training on TCRA 1105.*

It is with this in mind that I wish to dispel a few myths whilst also providing a general awareness of our current capabilities and equipment that has and will enable the Corps' surveyors to maintain the already high standard of engineering surveying currently enjoyed by the Corps as a whole.

At any given moment the Corps commands the skills of approximately 100 class 2 and class 1 qualified Engineering Surveyors. Not many considering the quality and quantity of work produced by the fraction of this number actually serving in a trade post.

A two-phase training programme exists and is designed to teach potential Engineering Surveyors the many

practical and highly skilled techniques he/she is expected to undertake in the varied works of the Corps and outside agencies, both military and civilian.

A potential Engineering Surveyor will initially undergo a 9-month full time course at the Royal School of Military Engineering (RSME), Chatham, Kent. Here he/she will begin with an intensive mathematics module designed to prepare the student for the intellectual rigours of the remaining training which continues with an introduction to the many time-served practices of the trade that underpin the very nature of the course including:

- a. Chain survey and basic instrument handling.
- b. Tacheometric survey (small and large scale).
- c. Establishment of survey control networks (including the application of adjustments).
- d. Levelling.
- e. Setting out (up to steel-framed building standard) using the 'sticks and string' method to use of the theodolite.
- f. GPS tacheometric survey.
- g. Production of comprehensive survey reports.
- h. Use of the associated software packages (Leica's Liscad SEE and CAD).
- i. Basic road alignment design (horizontal and vertical) including horizontal and vertical curve design (manually) and setting-out reports and data.
- j. Aerial photography interpretation.
- k. Earthwork calculations, by hand and electronically.
- l. Route and map reconnaissance.
- m. Basic computer operation including software such as MS Office.

*... considered a  
'black art' .....*

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The now class 2-trained Engineering Surveyor is despatched to the Field Army and, if fortunate, to a trade appointment within a Regiment where he/she can gain the relevant experience to enable them to return to RSME to complete their class 1 course. This is another intensive 7-month course and is designed to enhance the previously acquired skills and introduce a variety of new skills so as to produce the complete surveyor. These additional skills include:

- a. Advanced road alignment design using Liscad SEE software including the application of superelevation, widening and transition curve design.
- b. Rigorous adjustment of survey control networks.
- c. Hydrographic survey on still and open water.
- d. Survey team, office and task management.
- e. Further development of survey report writing.
- f. An in-depth knowledge of GPS theory.
- g. GPS and theodolite setting-out directly uploaded from road design data.
- h. Introduction to project management and quantity surveying.
- i. Advanced computer operation including software such as MS Office.

The student achieves an HNC in Engineering Surveying on completion of the class 2 course and will attain an HND on successful completion of the class 1 course. The Institute of Civil Engineering Surveyors (ICES) also promotes a progressive membership structure from 'student' (class 2) to 'graduate' (class 1) and, with appropriate experience, on to 'full membership' therefore further enhancing the benefits and civilian acclaim given to all Engineering Surveyors.



*Check levelling the Shaibah Logistics Base access road.*

In order to equip the students for all eventualities in both military and civilian survey environments the Corps has recently procured an array of 'state of the art' equipment from Leica Geosystems collectively known as the Engineering Survey System (ESS). This multi-million pound 'buy' now allows the already formidable skills of the Engineering Surveyor to be significantly enhanced. The new equipment included the following:

- a. Complete GPS 500 systems.
- b. TCRA 1105 semi and fully robotic theodolites (TPS).
- c. Na720 automatic levels.
- d. Liscad SEE and CAD software systems.
- e. Individual laptop computers and a range of printing capability (A4 to A1).
- f. Hydrographic sonar equipment.
- g. Laser levelling equipment.
- h. Two-way communication systems.



*Preparing for a GPS survey of the Riverside Enclave.*

62 Works Group RE, MWF, deployed to Op TELIC on 8th of July 2003 and were the design authority for a significant Area of Responsibility within Iraq. The Group was collectively responsible for the design, construction and maintenance of a high throughput of primarily infrastructure works until the end of March 2004. Eight engineering surveyors (six class 1, one class 2 and a potential tradesman) were deployed at various stages of the tour but the maximum team size at any one time was five.

My team and I were extremely fortunate to have conducted almost all aspects of the class 1 and 2 training courses. In total 87 tasks were undertaken some requiring a minimum of one day to complete but with the largest task taking one month. The range of tasks conducted included basic and large area tacheometric surveys through to road alignment designs and earthworks. Road, accommodation and infrastructure area setting-out was also a significant part of the workload. The tour culminated in a detailed hydrographic survey within the south of Iraq.

The ESS now allows all aspects of engineering survey to be completed much more quickly and efficiently. We now have the capability to conduct one-man surveys although this isn't always operationally feasible.

The new software has simplified the data processing, drawing production and design processes and therefore means that with experience and training the modern surveyor is capable of sustaining high quality work with an increased output. We can justifiably boast that our equipment is now very much on a par with, if not more advanced, than our civilian counterparts.

Already Engineering Surveyors have deployed with the new equipment to various areas of the world most notably Operation TELIC in Iraq. The Military Works Force (based at Chetwynd Barracks, Chilwell, Nottingham) deployed a full Works Group RE (approximately 50 technical staff) to the region to establish the infrastructure requirements of the land and air forces associated with this operation. This formation included a full complement of engineering surveyors used to complete in-theatre tasks and provide the field regiments with an advisory consultancy.



*Conducting a drainage stability survey with GPS at Basrah Ai.*



During our tenure we, and the equipment, had to endure debilitating weather conditions in an austere environment with a constant threat from the operational situation. At times the air temperatures exceeded 50°C which of course threatened the equipment as well as the surveyors themselves.

All components of the ESS performed excellently (including the batteries and radios) and even though the GPS (particularly) was exposed to temperatures outside its safe working recommendation it maintained its data integrity and subsequently hasn't been degraded because of such exposure.

The transition from our previous equipment and software has been surprisingly painless. Many of the students undergoing training currently are of the 'computer generation' and are finding the software very user friendly and extremely powerful. Often was the cry that our previous software could achieve a particular goal but on further investigation the replacement could not only carry out the request but completed it faster and more securely.



*The GPS500 Reference Station at Basrah Airport*

The prognosis for the future of Engineering Survey is excellent. With the help of the new equipment and the constant level of quality training from the RSME, in conjunction with the centre of excellence that is Military Works Force, all engineering surveyors are highly capable of conducting low level non operational tasks up to 'full on' operational tasks from one day to ten months and beyond.



*"Sappers at sea" conducting a hydrographic survey with GPS*

# THE SEVERAL PORTRAITS OF COLONEL HALL

*By Mike Nolan*



It was one's "misfortune" or "honour", depending on one's point of view to command 19 Topographic Squadron at Barton Stacey in 1977, the year in which it had been decided that the Squadron should celebrate the 150th anniversary of its formation. This was, of course, only about two years after 13 Field Survey Squadron, then commanded by Mike Irwin, had undertaken a similar celebration; and our big day followed a very similar format.

The Squadron lines were spruced up, a parade was held, the RE Band performed in the Gymnasium and as many of the old hands of the squadron as could be contacted were invited to attend the open day and the evening social and dance that followed.

One of the bonuses of all this was that the Squadron accrued an immense collection of copies of veterans' photographs, many illustrating the Squadron's travels in World War 2 from Fort Southwick to France with the B.E.F., and back via Dunkirk, thence briefly to Iceland, then by sea around the Cape to Egypt and the Western Desert, from Egypt to Ahwaz in Iraq with PAIFORCE and finally to Italy and Austria. Many more illustrated the numerous post-war overseas survey detachments. This collection was carefully mounted in three large green albums, which it was hoped might rival the Wallace Collection at Southampton. They were designed to be so large that theft would be impossible. Some hope!

Like 13 Squadron, we produced a souvenir brochure including a potted-history of the Squadron's 150 years of service. In best military traditions the drafting of this was delegated to a Troop Officer who, unbeknown to me, somehow further delegated what he considered to be an unenviable task to an ACC cook in 22 Squadron who had a bent, somewhat imaginative unfortunately, for military history.

With the big day looming the draft was discovered in a somewhat imperfect state and a last-minute rush to complete a reasonable account was at last taken aboard; and so began an obsession with Military Survey history that has lasted until now.

The Director of Military Survey had presumably likewise delegated to Map Research and Library Group at Tolworth the task of coming up with some suitably appropriate cartographic memento of the Squadron's formation. Now, the 19th Company Royal Sappers and Miners had actually been formed as a Service Company at Woolwich and so it was that General Kelsey actually presented the Squadron with a reproduction of a cross-section of some crumbling foundations of a barrack building at Woolwich executed by a Lt Covey RE, one of the 19th Company's first officers.

The Director General of the Ordnance Survey, General Irwin, presented the Squadron with an illuminated copy of a portrait of Lieutenant-Colonel Hall RE who was the Superintendent of the Ordnance Survey from 1847 to 1854, and this was perhaps a timely reminder that the 19th Company Royal Sappers and Miners only became a Survey Company in 1849. The original, still in the Ordnance Survey at Southampton, is a watercolour measuring about 43 x 56cms, signed *Herbert L. Smith Delt 1852*. The illumination of the copy was done by KE Jessup of the Ordnance Survey.

It was only some years later that I came across the following note in the RE Journal of 1 July 1886: -

*"Sir, - May I again trespass on your space on the subject of my History of the Corps? I want information on the following points: -*

*In the equerries luncheon-rooms at Windsor Castle are a series of pictures of the British Army of about the date 1830. The Royal Engineers are represented by three portraits - an officer R.E., a sergeant and a sapper of the Royal Sappers and Miners. The officer, who is in the centre, is Captain Hall R.E. He is in a scarlet coatee with blue facings, gold lace and*





Lieutenant-Colonel



L. A. HALLRE.

Director General of the Ordnance Survey in 1848.

when the 19<sup>th</sup> Company, Royal Sappers & Miners began its long association with the Ordnance Survey.



Presented to

19 TOPOGRAPHIC SQUADRON  
ROYAL ENGINEERS

on the occasion of the 150<sup>th</sup> Anniversary of its formation

by

Major General B. St. G. Irwin, C.B., Director General, Ordnance Survey.

26 March 1971

B. St. G. Irwin



buttons, white trousers, cocked hat (such a hat!), white plume, &c., and he holds a roll of plans in his hand. Who was Captain Hall, and why was he selected to represent the Corps in such a distinguished position?

Etc.

I am, &c.,

Whitworth Porter,

Major-General, late Royal Engineers”



The Royal Collection (C) 2003, Her Majesty Queen Elizabeth II

and Brevet Major in 1838, Lieutenant Colonel in 1846, Colonel in 1854 and ultimately Lieutenant-General in 1863. In this last year, he was appointed Colonel-Commandant of the Corps, a post he held until his death in 1868. In 1852 he published a work on Astronomy.

Catalogue items 2143 and 2144 are similar portraits of Serjeant John Johnston, Royal Sappers and Miners, lighting a grenade and Second Corporal George Allan, Royal Sappers

General Porter subsequently produced the first two volumes of *The History of the Corps of Royal Engineers*, the first being published in 1889. However Captain Hall's name does not appear in the indices of these publications.

I had long wondered if Captain Hall was one and the same as the Colonel Hall who became DGOS and the recent, most interesting, visit by the Defence Surveyors' Association to the Royal Library at Windsor provided an opportunity to try to resolve this query. The answer was found in AE Haswell Miller & NP Dawnay's "Military Drawings and Paintings in the Collection of Her Majesty The Queen at Windsor Castle". Catalogue item 2142, describes Plate 431, "Royal Engineers. Capite. Capt Hall, signed A.J. Dubois D." (with additional information from Connolly's List of Officers of the Royal Engineers), as follows: -

*Second Captain Lewis Alexander Hall, Royal Engineers, born in 1794, gazetted as Second Lieutenant in the Royal Engineers in 1810, became a Lieutenant in the following year, was promoted to Second Captain in 1825, and Captain*





and Miners, charging bayonets. All three portraits were painted by Alexandre Jean Dubois Drahonet (1791-1834), a French society painter, who had been commissioned by King William IV to paint a series of pictures illustrating changes in the uniforms and weapons of the British Army. Copies of all ninety or so known portraits by Drahonet have been published in a National Army Museum Publication, "Portraits for a King – The British Military Paintings of A. J. Dubois Drahonet (1791 – 1834)" by Jenny Spencer-Smith.

Hall's time as Superintendent of the Ordnance Survey is described briefly in "A History of the Ordnance Survey" edited by the late Colonel W.A. Seymour. The bare facts of Hall's career prior to his appointment are as follows: -



*The Chatham portrait - image kindly provided by the Institute of Royal Engineers*

He was born in Quebec on the 8th April 1793. He was commissioned as a 2nd Lieutenant in the Royal Engineers on 21 July 1810, aged 17 years and 3 months and joined for duty at Woolwich on the 20 August 1810. He was promoted to Lieutenant on the 1 May 1811 and posted to Eastern District. In January 1813 he was posted to Chatham to the establishment for instructing Sappers and Miners in field works, but in May he was posted to Gibraltar embarking on the Brig Adventure in July and arriving in Gibraltar in August. He returned to Woolwich on 9 August 1814 remaining there till January 1816. After leave during January to March 1816 he was posted on the 1st April 1816 to Valenciennes returning to England with a detachment of Sappers in December 1816. However, in January 1817 he returned to Flanders serving variously at Cambray, Valenciennes and Raismes. He returned to Woolwich on 8 Nov 1818.

For most of 1820 he was stationed at Plymouth departing for Ireland in December where he served at Banagher, Tarbert, Limerick and Galway until April 1825, being promoted to 2nd Captain on 12 Jan 1825. On 6 June 1825 he embarked on the Packet Cambden for the Caribbean where he served in the Bahamas and at Barbados with detachments to Berbice and St Lucia. In January 1827 he married. He embarked for England on 28 Dec 1830 and after leave, joined at Woolwich in April 1831 where he served till November 1834. He again embarked for overseas service at Gibraltar on 30 November 1834 remaining there till April 1839 and being promoted to 1st Captain on 19 August 1835 and Brevet Major on 28 June 1838. On return to England he was posted to Portsmouth until 9 March 1841 when he was appointed Chief Engineer London District. He was promoted to Lieutenant Colonel on 1 April 1846.



In March 1847 he was appointed Superintendent of the Ordnance Survey and held the post till August 1854, being promoted to Brevet Colonel on 20 June 1854 and Colonel Royal Engineers on 23 September 1854. From November 1854 till July 1859 he was Commanding Royal Engineer in Corfu, being promoted Brevet Major General on 10 May 1859. From August 1859 till 16 March 1868 he was unemployed during which time, on the 3rd August 1863, he was appointed Brevet Lieutenant General and Colonel Commandant. His total Full Pay Service was 57 years 169 days, Half Pay 70 days. He died on 16 March 1868 at Southampton.

The painting of Captain Hall shows him holding a plan of some fortifications, and this is perhaps indicative of his employment which may be presumed to have been mostly on garrison works and fortifications. It is not known if he was ever employed on military survey work prior to his appointment as Superintendent of the Ordnance Survey, but it seems unlikely. The only cartographically-related items so far found in the Public Record Office in any way attributable to Hall are some drawings of barracks in Corfu countersigned by him as Commanding Royal Engineer, Corfu in December 1856.

Hall's work on Astronomy is actually: -

*Ordnance Survey – Astronomical Observations made with Airy's Zenith Sector From 1842 to 1850 For The Determination of the Latitudes of various trigonometrical Stations used in the Ordnance Survey of the British Isles. Published by Order of the Master General and Board of Ordnance under the direction of Lt Colonel Lewis A. Hall, Royal Engineers, Superintendent of the Ordnance Survey, By Captain William Yolland of the Royal Engineers, F.R.A.S. And For. Mem. Acad. Miliy. Sciences of Stockholm. London 1852.*

This book comprises 1009 pages of observational data and only the short Preface was signed by Lt Col Hall R.E., Ordnance Map Office, Southampton. In this, Hall fairly attributes the direction of the work from 1842 – 47 as under Colby and only since 1847 as under himself. The observations from 1842-1844 were by late Captain PJ Hornby and Captain W Driscoll Gosset, subsequent observations were made by NCO's of RS & M attached to Captain William Yolland RE. The book includes a description of the instrument, the method of observing, notes on the selection of stations, an explanation of the printed observations, a comparison of geodetic and astronomical amplitudes of stations, and finally, descriptions and altitudes of the stations occupied.

The third known portrait of Hall is that hanging in the RE Headquarter Mess at Chatham. This must be considered one of the lesser portraits in the collection for it is not included in the publication "Portraits & Silver of the Headquarter Mess". There is little information on this portrait at Chatham. Why Hall should have been chosen for the portrait by Drahonet, and what the background to this third portrait is, are as yet unsolved mysteries.

Hall's time in the Ordnance Survey came to an end in 1854 when he handed over to Major Henry James RE. His farewell order survives in O.S. archives: -

*GENERAL ORDER NUMBER 170.  
ORDNANCE SURVEY MAP OFFICE, SOUTHAMPTON*

*9th August 1854*

*Major James RE having waited on me this day and having been accompanied by me round the Head Quarters Office, I hasten to put him in Orders as Superintendent of the Ordnance Survey in compliance with directives appointing him my successor but I cannot quit a command I have enjoyed for more than seven years without a few parting words to those, both civil and military, with whom I have been so long and so agreeably connected, and in whose welfare I have entertained and shall continue to entertain with a sincere interest.*





*To the Superintendent the conduct and character of his assistants must be of the first moment, and upon their conduct and character (united with zeal and ability) depend in a chief degree the credit of any great public Department. It is therefore with great satisfaction that I can today testify to the exemplary conduct and praiseworthy zeal which has been exhibited by the force, both civil and military during the whole period of my command, and I would here remark to the younger members that it is by a continuance of such good conduct and diligence that they can alone expect to ensure the rest of their superiors and advancement for themselves.*

*Whilst thus recording my sentiments and acknowledgements towards those who have so faithfully served under me I reflect with pleasure that it has been in my power to gain a few favours for their benefit as welcomed I hope by them as gladly obtained by me as an incentive to further exertion. I may enumerate some of those lately sanctioned.*

*“A week or fortnight’s leave per year according to Rule without loss of pay for all civil assistants, and I believe that the quantity of work performed has not suffered by this relaxation of lessening the Engravers hours, and the quality of the work (aided by more supervision) has materially improved and it was my intention that had I remained here until the temporary necessity of working overtime had ceased, to have reduced the regular working hours throughout the indoor office of the Survey, believing that my experience of the reduction and relaxation already granted permitted me to anticipate benefit to the Public Service as well as to individuals by further relaxation.*

*To certain of the assistants unto whom it has been gratifying to me to be able to announce their participation in the benefit of retiring allowances.*

*For the military I have had the greatest pleasure of procuring them important appointments viz a Quartermaster with a high rate of work pay in addition to his Regimental pay; a permanent Sergeant Major and a permanent Quartermaster Sergeant. These are prizes (two years ago unknown in the Survey Company) which whilst tending to raise the tone of the sappers generally should act as inducements to young men to strive to distinguish themselves for early promotion and for meriting further indulgences.*

*When I addressed the individuals of the Department in 1847 I trusted that they would continue to perform their duties with promptness and regularity as they had done under General Colby. My expectations have been more than realised and I give over the Ordnance Survey this day satisfied that I leave it personally of a high class generally, and of a better tone and better education than when I took charge seven years ago. I sincerely trust that by progression amongst themselves they may continue to increase in the estimation of my Successor from day to day to whom I now recommend for every consideration in his power.*

*In conclusion I have to thank my officers for their cordial co-operation with me, and the manner in which they have generally carried out my directions and views.*

*I wish all, to whom I now bid farewell, may prosper from henceforth. All reports and communications will be addressed to Major James RE.*

*(Signed) L.A. Hall  
Colonel RE*

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