

RSi

THE

JOURNAL

of the ROYAL SIGNALS INSTITUTION

Volume xxx

No 1





ROYAL SIGNALS INSTITUTION

Deane-Drummond Prize Essay Competition 2011

(Closing Date – 31st July 2011)



First Prize £1000

Second Prize £500

Third prize £250

Question: How should the Corps adapt in response to cyber threats and opportunities?

SDSR context: “Over the next 5 years, we will develop a transformative programme for cyber security which addresses threats from states, criminals and terrorists and seizes opportunities which cyber space provides for our future prosperity and for advancing our security interests”.

The essay should: demonstrate understanding of cyber threats and opportunities; recognise the breadth of cyber activity and make specific recommendations for Royal Signals.



Rules of the Competition:

Entrants must be Full Serving Members of the Royal Signals Institution (RSI).

Essays should be between 1500-2500 words and submitted in electronic word format.

Classified matters should not be included.

References and quotes must be in accordance with Harvard System of Referencing.

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Welcome to our new look Journal, as the Corps moves into its tenth decade and all the uncertainties associated with a reduced Armed Forces, shrinking budget and seemingly arbitrary manpower reductions. All of these and more will certainly influence what we will see in our future issues, but we hope that the changes to our layout and presentation will enhance your enjoyment and understanding of the subjects covered. We have retained the traditional contents headings, colour coded for better reference throughout the Journal. For the first time in over ten years, this issue features the top entries from the last Prize Essay competition, which reflect the general high standard of the competition. Elsewhere, the article by Colonel John Blashford-Snell is an apt curtain-raiser for his forthcoming Blandford lecture in October, and our ever-popular Historical section contains more fascinating snippets from the past. We look forward to hearing your views!

Tom Moncur



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STOP PRESS ITEMS

2010 PRIZE ESSAY COMPETITION- EXAMINERS COMMENTS

The competition attracted an encouragingly large field of entries, and it was particularly gratifying to see entries from late entry and warrant officers. The successful entries reflected considerable work in consulting bibliography, sources and reading around the topic. Authors who took trouble to structure their essay, using proper introductions, arguments and conclusions scored well, as did those who gave some thought to their readers by confining themselves to simple, expressive terminology, and avoiding the use of flowery prose, jargon and overblown expressions. Many entries took a long time to get to the point, to the stage where they scarcely got round to addressing the topic, perhaps a reflection of an over-hasty approach. Even in our modern digital age, the effective use of language, either verbally or written, is an essential tool in the locker of every senior rank; few of us are born with this talent, and it is in making full use of opportunities such as this competition that real ability can be developed. We look forward to more entries this year!

CORPS FIRST FOR TOP STUDENT

Congratulations to Lieutenant Jonathan Leigh on coming top of his Troop Commanders Course and thereby becoming the first to participate in the Corps sponsored Journeyman scheme with the Worshipful Company of Information Technologists. This is a new venture established to extend and strengthen our existing links with the 100th Livery Company of the City of London. Each year from now on, the top students on all the senior Royal Signals courses of instruction at the DCCIS, including the CISM course, and all the Foreman and Yeoman of Signals courses, will be offered Corps sponsorship through the three year "journey" to full membership of the Company, with all the advantages this offers for professional and personal development.



RSI BLAN

Colonel J Blashford

Monday

"In Search of

The event will be held at Blandford Camp. The event will be followed by a book signing session. Admission is free, but space is limited. For more information, visit royalsignals.mod.uk or call 01252 333333.

SWINDON TOWN FC SUPPORTS HELP FOR HEROES



SSgt (PM) Jimmy Scott leads the Corps Pipes and Drums in entertaining the crowd at County Ground



Pipe President Colonel Garry Hearn starts the proceedings



SWINDON TOWN FC LECTURE

John Snell OBE DSC(H) FRSGS

Friday 24 October 2011

“The World of Lost Civilisations”

The lecture will be held in the Princess Mary Hall at Swindon. The start time is 1730 for 1800, and refreshments are available on arrival. The lecture will be followed by a glass or two of wine and a drink for about 30 minutes until 1900. The cost is free. We expect a large attendance, so space is limited, and anyone planning to attend should email the RSI Secretary at rsi@swindontownfc.co.uk with names and car registration details as soon as possible.



21 Signal Regiment (AS) personnel form a guard of honour for the match officials

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THE DEFENCE COLLEGE OF CIS

By Colonel Garry Hearn



Colonel Garry Hearn joined the Royal Corps of Signals in January 1979 as a Radio Telegraphist and served on operations in the Falklands conflict, as part of the Rhodesia ceasefire monitoring team and with 42 Commando Royal Marines in securing Espiritu Santo in Vanuatu. Selected for commissioning in 1984, he served several tours at Regimental Duty before returning to 30th Signal Regiment as Operations Officer in 1999. During this tour with the Regiment he deployed to Kosovo and supported operations in the Gulf, the Balkans, East Timor and Sierra Leone. His appointments at staff include serving with HQ 5 Airborne Brigade as the chief Brigade logistician and a further airborne appointment as SO2 Airborne Forces at the then HQ Strike Command. In 2003 he was selected to command 34 (Northern) Signal Regiment and in 2005 he was appointed as Colonel MS Reserves at the Army Personnel Centre. Back in Blandford in 2009, he commanded the Royal School of Signals before taking up his current post. His interests include football, (an avid Swindon Town supporter), running, playing the Bagpipes and studying for an MSc degree in Human Resource Management.

Introduction

The HQ of the Defence College of CIS (DCCIS) is well established at Blandford Garrison. It has a clearly defined core purpose to deliver individual, foundation and pre-employment training, harnessed to technical, military, command and ethos education. The aim is to produce skilled, confident and tough signalers and communicators, and the College HQ oversees the training of Phase 2 and Phase 3 trainees not just within the trades of the Royal Signals, but the relevant trades of the Royal Navy through the CIS Training Unit (CISTU) at HMS COLLINGWOOD, and Royal Air Force through No1 Radio School (No1 RS) at RAF Cosford. The recent announcements of programme cancellations and the fallout from the Strategic Defence and Security Review have meant a number of changes to the plans of the Headquarters and the College as a whole, but this has not detracted from its core purpose.

The contextual training of Royal Signals trainees through the Command Simulator and the Forward Operating Base provide a model for not only the other schools within DC-CIS, but the other MOD technical training colleges. We are also making strides into modern learning; the chalk and talk methodology is no longer the ideal training method for the Playstation generation, although it still has its place. What follows is an overview of the contextual training carried out within Blandford Garrison by 11(Royal School of Signals) Signal Regiment, an idea of some of the modern learning techniques that are being investigated and deployed across the College, and an overview of the way forward following the cancellation of the Defence Training Rationalization (DTR) programme.

Contextual Training



Communications Simulator

Due to the major operations in Iraq and Afghanistan, communications management has changed considerably and remains a rapidly developing environment. RSS required a means of training managers for this environment in order to prepare personnel for their new appointments within the Field Army in the Contemporary Operating Environment (COE).

The Communications Simulator (Com Sim) originally started as a Bowman Simulator based around the Landrover Based Training Aids (LBTA). The Old School Building (OSB) Com Sim has been experimentally developed over the last 18 months to attempt to include an Information Communications System (ICS) which can also simulate more modern strategic communications and trunk systems.

The project has consolidated training facilities in J corridor, Old School Building in order to provide a fixed number of syndicate rooms in which to train potential supervisors and Officers. The rooms themselves have had several important upgrades including the installation of a structured wiring system to increase flexibility and reduce build times, together with the addition of smart panel systems to allow students to display and interact with mission critical information. Further improvements to syndicate rooms include an upgrade to the computer systems, and addition of video conferencing (VTC) to every room to allow a full scale exercise wide conference with a monitor-

ing capability for Directing Staff (DS).

The command and control for the exercise is done in Excon, which is a dedicated room used to control all aspects of the exercise. Excon is furnished with two new ICS equipment racks populated with a host of Cisco networking equipment, new servers, a multi point controller for VTC, Avaya exchanges and a UPS in case of mains failure. All the equipment is configured on an exercise by exercise basis to give the students real networks to manage. During the exercises, DS have unlimited options on which parts of the network to manipulate in order to inject serials or generate activity amongst students. Overall, the new installation offers student and DS a more flexible exercise experience which is closer than ever to the networks experienced in theatre.



FOB Thorpe

Forward Operating Base (FOB) Thorpe, located next to the airfield at Blandford, was built in the summer of 2009 by the RE as part of their pre-deployment to Op HERRICK and is named after Sgt Peter Thorpe, of 14 Signal Regiment, killed in action in Afghanistan. It took two weeks to build and, other than the plant machinery to fill the HESCO with sand, no power tools were used whatsoever. The FOB deliberately has no power, running water or any other 'mod cons'. The logic being that if units wish to have these things, they are responsible for bringing them themselves (worst case scenario training). All Phase Two soldiers spend at least five days operating out of FOB Thorpe to give them a flavour of life in a HESCO world. The six ISO containers are empty and are generally used for accommodation – housing around ten soldiers each. We try to get as much life into the FOB as possible to create a realistic, busy, FOB routine. To date the RM, AAC, RTR, and RLC have all come to operate out of the FOB.

Modern Learning Techniques

A number of modern learning techniques are currently being implemented and developed across the College. With students now being more technically aware, there is a need for teaching techniques that don't necessarily conform to the traditional chalk and talk methodology.

Moodle - This is a virtual learning environment able to host multi-media and is an open-source course management system extensively used by the OU, universities, schools etc. This is already in use by some courses in 11 Sig Regt, and is being rolled out to every Squadron as well as DCCIS.

Quizdom – This is a handheld device that allows the instructor to pose multi-choice questions to a class, with answers being instantly accessible. This increases student engagement and allows for summative and formative assessments.

Future Learning Programme

The Future Learning Programme (FLP) aims to enhance the teaching and learning experience through greater sharing, discussion and experimentation and enable the wider adoption of emerging good practice, which may include a greater learner contribution to their own learning activities. The FLP will introduce Evidence Based Teaching (EBT) methods at DCCIS Schools. The introduction of EBT methods will be trialled at each School (11(RSS) SR, CISTU and No1 RS) during the period January-July 2011.

Over 90 DCCIS personnel have volunteered to be 'experimenters' or 'facilitators', and those selected will receive additional training on EBT methods, the conduct of SE and additionally for facilitators, training on solution focused coaching from the Learning Support Network (LSN). During the period February-June, experimenters, supported by facilitators, will plan and then conduct SE using EBT methods in the delivery of some DCCIS training. Such experiments will provide empirical evidence on the applicability of EBT methods in DCCIS training delivery. In addition to the introduction of EBT methods, the FLP will engender a climate for the sharing, discussion and experimentation of teaching and learning methods and practices. The FLP will be subject to review and assurance with the support of LSN. Towards the end of the SE trial, a 'learning fair' will share the results of the trial with all DCCIS staff and a decision taken by the DCCIS Management Board on the future use of EBT methodology.

Cancellation of the DTR Programme

DCCIS has seen its future plans change at a rapid rate over the last five months when the MOD decided not to proceed with the Defence training Rationalisation (DTR) programme, which was to see the training of Royal Signals soldiers move to RARF St Athan. The cancellation does not mean that the College will now stagnate, there will still be changes for DCCIS (not just at Blandford but at the CISTU, 11 Sig Regt, BGSU, No 1 RS, Trg Sp, ICTF), and the other Defence technical colleges, the Defence College of Aeronautical Engineering (DCAE) and the Defence College of Electrical and Mechanical Engineering (DCEME).

It was recognised several years ago that the current method of delivering technical training is not as cost effective as it could be, and while it might be working acceptably now, it is certainly not going to be affordable over the next few decades. Something must change therefore, if we are to continue to deliver high quality CIS training to the RN, Army and RAF. This has been compounded by two additional problems: firstly, the recent economic recession has put significant pressure on Government funding across the board, and secondly, the realisation on top of this that Defence has a big funding gap and needs to make additional savings to cover it. DTR, it was hoped, would deliver sufficient change to the three technical colleges (DCCIS, DCAE and DCEME) to secure affordable training for the next 30 years. Without DTR we no longer have this certainty. In order to regain that assurance, MOD has set up a replacement programme, the Defence Technical Training Change Programme (DTTCP).

In the short term there is a more pressing issue: Metrix, the preferred bidder for the now defunct DTR programme, was expected to start taking on their responsibilities with effect from Spring/Summer 2011, and we now need to fill this gap and keep training going. To achieve this, the Training Continuity Plan (TCP) is being developed by AOC 22 (Training) Group, which effectively started on 19 October last year, when DTR ended, and will run for about five years. How will DCCIS be affected by the TCP? The big effect is that it should allow DCCIS to continue training servicemen and women for the next five years in order to meet the requirements of the Front Line Commands (FLCs). There will be some changes to allow this, training will slowly be transformed, including improvements to delivery and there may be a few small moves. For example it is possible that DCCIS training currently conducted at RAF Cranwell will be centralised at Cosford.

Hopefully we will also be able to take advantage of some of the areas that 11 (RSS) SR and No 1 RS have in common. We will be examining how we operate DCCIS (and its facilities and estate) today with a view to making it more efficient, supporting Tri-Service training where appropriate, but underpinning this is the need to continue delivering single Service, cap badge ethos and culture as happens at present. Part of the TCP is likely to involve changes to training methods, course content and course pipelines. The DTTCP will involve greater change than the TCP and should secure affordable training for the next 25 years.



TACTICAL DATA LINKS - 22MBS OVER FIVE MILES USING COPPER CABLE AS A TRANSMISSION MEDIUM

By Alec Umansky of Defence Communications Industry P/L and Ian Thomas of the Department Of Defence, Melbourne, Australia



Alec Umansky began in the telecommunications industry in 1981, with the then Telecom Australia (currently Telstra) in the area of switching. He holds degrees in Digital Electronics and Communications and Advanced Micro-processor Design & Techniques. Joining Philips (Public Telecommunications Systems) in 1986, he worked on the introduction of fibre-optic transmission to major carriers with postings in Australia, Germany and UK. Returning to Australia in early 2000, and having obtained further diplomas in small business management, he formed his own company, Defence Communications Industry specialising in design, development and marketing of communications products for defence and industrial markets.

This paper presents an innovative approach for tactical data links – developed in close collaboration with the Australian Army Signal Corps (RASC), with the objective of overcoming the problem of fibre-optic cables’ propensity to damage in the field. The result of this successful collaboration has led to the development of a field deployable communications product that uses copper cables (WD-1/TT type) as its communications medium and is capable of extending data over 5 miles at bandwidth of up to 22Mbs – an effective soldier friendly alternative to the fibre-optic cable based systems, especially on a brigade level and below. The paper reviews the rationale behind the selection of an ‘off the shelf’ transmission technology and its adaptations to make it highly suitable for the military field deployed environment. Technical and logistical advantages of using copper wires in modern data applications are presented, including the Australian Army’s report of the early field trial. This collaboration and the resulting product won the AFCEA ‘Golden Link Award’ as well as a number of other prestigious industry awards for its outstanding innovation.

Introduction

Rapidly deployed, simple to use, effective and reliable communications are vital in modern military operations. The area of data tactical links and the so called 'ad hoc' networks requires equipment providing high bandwidth for expedient data transfer while being simple to install, operate and repair. Invariably this equipment needs to be capable of a wide range of applications.

The commonly adopted standard in tactical LANs is the use of the fibre-optic cables (FOC) offering secure signal propagation and high bandwidth. However, fibre-optic cables have a propensity to damage especially when used in areas of high troop and machinery movement. This is particularly relevant to the 'rear echelon' or Troop Support Elements where FOC damage is a regular occurrence due to it being bent or torn. Inherent in FOC is its difficulty and often impracticality to repair – in the field. Compounding the problem is the fact that logistics troops need to relocate every few days – especially on a brigade level and below.

Yet another practical problem with FOC is that they are often impossible to roll-out in difficult terrain e.g. in earthquake recovery operations, mountainous terrain, tunnels and similar harsh environment. Wireless technologies are often difficult to use due to these locations due to signal reach (i.e. lack of direct line of sight) and sometimes due to security constraints.

With these concerns as its background brief, the Australian Army started to research alternative technologies that could alleviate FOC field deployable problems. One technology that stood out was 'DSL' - transmission signal modulation specially designed for copper cables for delivery of internet and other data services by telecom carriers. What this technology promised to allow was the use of common 'field wire' or WD-1/TT type steel reinforced copper wire in place of FOC in specific environments and on a brigade or below levels.

Rationale for using copper cables (or 'DON10' as it is known in Australia) was that the technology promised relatively high bandwidth over distance, but more importantly, copper cables offered a 'soldier friendly' transmission medium that even when damaged could easily and quickly be repaired by soldiers.

Adapting DSL Cable for Military Applications

The key characteristic of an 'off the shelf' public telecom DSL technology that it is specified in two main variants: exchange (or switch) based modems and customer premises based modems. Effectively, this corresponds to two types of equipment with different power and infrastructure requirements and thus restricts its use in portable deployable applications. In addition, chipsets that provide signal (data) modulation and are different at each end of the

transmission line which further restricts equipment configuration and more importantly, its bandwidth flow.

The first challenge therefore in adapting an off the shelf 'dsl' based equipment is redesigning its exchange and customer premises delineation i.e. a programmable line interface or Master/Slave configuration is the first step that opens dsl to be used in portable field deployable communications products.

The second, relatively simple design challenge is selection of the suitable modulation technique of the two defined by CCITT (public telecommunications standards governing body). The DMT (or Dual Multi-Tone) modulation was determined to be well suited for the field deployable environment due to its noise immunity whereby the signal (and the effective bandwidth) is modulated in multiple frequency carriers (up to 300) with each carrier being tested and then monitored for bit-error-rates, signal-to-noise ratio and other electrical parameters.

Once transmission issues were clearly defined, the remaining design concerns were similar to any other portable field deployable device: battery back up power, rugged carry case, dust and moisture proofing. Within a relatively short period of six months a number of functioning prototypes were built for trials by the Australian Army. The trials were a resounding success and proved conclusively the effectiveness of DSL technology and as a result, established grounds for actual product development.

P3 – Redefining a Standard in Tactical Data Links

The general scepticism towards using copper cables for modern data communications is historical. Copper cable and its military variant or 'Field Wire' has been used as a basic means of Morse code communications and general 'Signal Wire' since before the First World War. Although a well proven comms medium its use in modern communications is perceived as archaic. Of course, Field Wire (or WD1/TT) is still used today in both military and industrial applications, but its use is limited to basic telephony or as 'signal' wire.

Transmission technologies used in today's armed forces for voice and data links are predominantly fibre-optic cable and satellite based. However, when transmission systems are used in a tactical environment two important disadvantages of using fibre-optic cables (FOC) are overlooked:

- FOC tendency to damage due to heavy machinery operating and night time troop movements
- FOC inherent difficulty to be repaired in the field

DSL transmission technology allows copper cable to be used as a modern and relatively high bandwidth communications infrastructure and Australian Army have led the way in this technology adaptation for its requirements. The three important factors in considering this alternative

by the Army were:

- a significant cost reduction (a factor of x20) in using copper compared to FOC
- the ease of copper cable roll-out and retrieval and
- the ease with which copper cable can be repaired: “as easy as tying shoelaces”

Early Trials Success

The first functioning prototypes of a tactical data modems using Rate Adaptive DSL technology were trialled in a field deployed logistics environment during the ‘Crocodile West’ Army exercise. The equipment viability was proven within the first two days of the exercise when FOC links were inadvertently damaged and the main data link between the two logistical depots continued to operate over copper cable.

The way was now open to the new product development that would provide a viable alternative to the FOC systems. Its configuration and features were determined in close consultation with the Army Signallers thus ensuring that the product did precisely what was expected of it. The number of transmission channels was determined to be three: for both diverse paths connectivity and redundancy. Basic analogue telephony and VoIP functionality was also integrated as a complementary feature.

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To make the new product (named ‘P3’ Portable 3 transmission channels) field deployable, its electronics were integrated into a rugged case; with battery back up and a variety of external power sources operating it.

Figure 1. P3 early field trials & first production version

Particular effort went into the design of a user interface where P3’s set up and management is simple and kept to an absolute minimum. In early 2003 the P3s were distributed across Army Signal Units for operational use.

Secure Transmission Over Copper

P3, with its rate adaptive DMT modulation technology represents highly secure transmission of voice and data over copper in the tactical environment.

Digital signal modulation encrypts (or scrambles) the data transmission across 300 frequency carriers – that effectively represents max possible bandwidth. At the time of initialisation each of the 300 frequency carriers is tested for its signal-to-noise ratio and bit-error-rate. The length and physical condition of the copper cable will have impact on these parameters. Once the process is complete, only those carriers that passed the initialisation test will be activated. At this time, data packets are scrambled across active carriers. From the transmission perspective the scrambling minimises interference between each frequency carrier. From the data security perspective, the effective result can be compared to a ‘one time pad’ – a unique transmission condition, as data scrambling parameters exist only between any two directly connected P3s. The greater the number of users or data packets sent across any given data link, the greater the scrambling effect.

The transmission energy of dsl is low - approx 3W per transmission channel. It is driven directly into the copper making its electronic signature extremely small. Signal leakage or energy that is not driven directly in to the copper cable is eliminated by the fact that during the initialization each frequency carrier that did not pass the bit-error-test will be deactivated. Furthermore, it is impossible to ‘listen’ to the transmission as any transmission parameters variation will cause the link to shut down. Similarly, if the copper cable is cut, the transmission stops.

These features are inherent in the DSL technology itself and although very effective in terms of transmission security, do not represent any government level of data security. In order to establish that, military grade encryption systems are used – deployed prior to the point where data (Ethernet) is connected to a P3. This in effect makes P3s a transparent data transmission device.

Cost of Copper Cable versus Fibre

Following early equipment trials, Australian Army conducted an assessment of the cost differential between using copper cable based transmission and an equivalent fibre optic cable based system. This was based on the cost of infrastructure and did not take into account costs of damage and replacement of cables, commonly experienced with fibre optic.

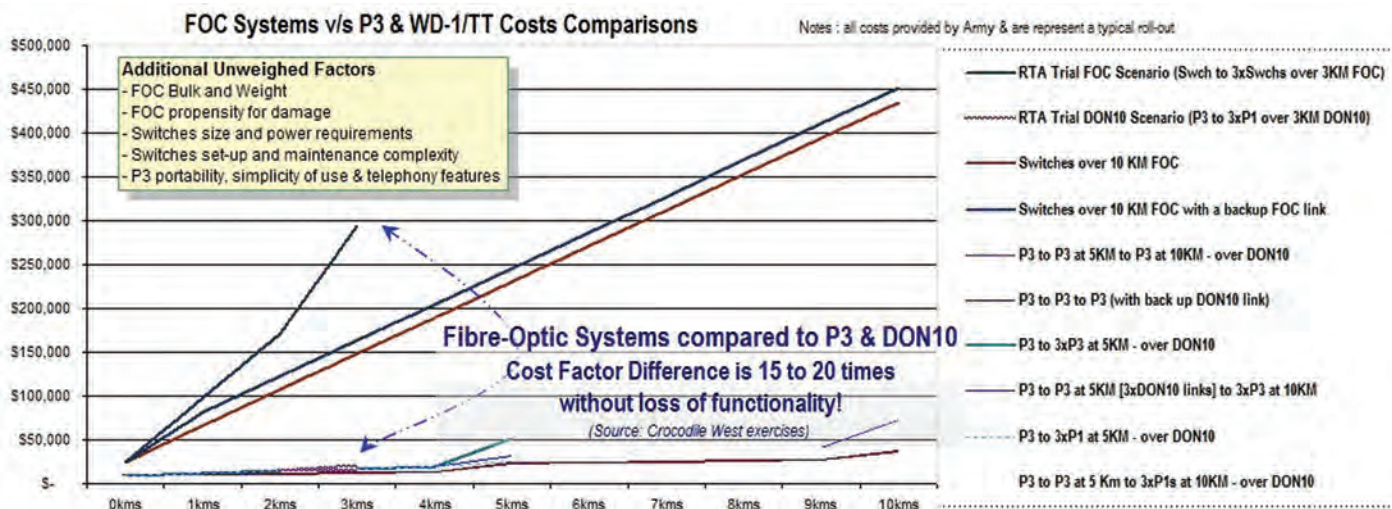
Using a variety of scenarios, FOC costs show linear growth, largely attributable to the cost of fibre cable over distance. When compared to the equivalent set up using copper cable (WD-1/TT) the cost is consistently lower to factor of x20 – again this is predominantly attributable to the cost of copper cable over distance.

The starkest example of cost escalation is the Army trials was duplication (back up) of either comms medium. Extending duplicate copper links produces a marginal cost increase whereas, fibre optic duplication produces a dramatic cost rise (a factor of x40). Additional factors for consideration are the bulk and weight of FOC, the size of switches and power requirements and complexity of maintenance compared with P3's portability, simplicity of use and inbuilt telephony features.

Specific P3 Application Examples

The British Army, in seeking to improve its out of barracks logistics and supply support, (UNICOM OOB) successfully trialled P3 in 2003. P3 is now in service with the British providing remote access and enhancing the capability of the existing UNICOM system.

The Canadian Army has also trialled the product for an innovative 'Fire Control' application where the device provides data as well as voice command extensions from a ballistics computer to individual gun positions. Again, the use of copper as the main communications medium is not only significantly cheaper but enhances functionality by providing seamless back up links using the spare P3 transmission channels.



Costs Comparison of Fibre-Optic compared to copper.

Areas of Application

Australian Defence had identified the need for a solution that allowed its Land Local Area Network (LAN) Communications to be extended to its field deployed logistics units. The in barracks logistics system, the Standard Defence Supply System (SDSS) was to be extended to provide support for its logistics business, whilst being deployed operationally in the field. The resulting deployment of SDSS supported by a stand-alone version of SDSS called FLMS (Field Logistics Management System) provides seamless 'in and out of barracks' communications.

The extension of the LAN communications was largely made possible with the use of P3 and is now part of Army's new standard for field deployed communications.

Another important issue addressed by ADF was the need to provide redundant links (backup) for downed fibre optic networks – a regular occurrence in the field. Signallers can easily and cheaply repair copper cable, in sharp contrast to fibre optic cable, resulting in significant cost savings with no loss of capability.

Inter-coalition data links can be established with ease and extremely cost effectively by simply rolling out copper cable between two or more HQs within an area of operation. Subject to bandwidth requirement this may not always be practical but when the bandwidth demand is within P3 capability, this is a very effective C3 option.

Civil Defence and Emergency

Communications are of paramount importance in the management of emergency situations. In crises such as fire, flood or explosions, existing communications infrastructures (typically fibre optic networks) are often damaged or destroyed, and an immediate task for emergency response teams will be to enable communications to and from the damage site. There is a further demand for interoperability of equipment between civil emergency response teams and the military.

It is commonly thought that wireless communications will provide an immediate and all encompassing solution. However, in a typical disaster area where no power and other infrastructure may be available it takes considerable time and resources to deliver and setup for wireless. As well, this technology has limitations in propagating in difficult terrain.. In such disaster situations, P3s have a prov-

en functionality. A portable device that is weather proof and independent of power or other infrastructures can be deployed on site instantly. Multiple P3s may be interconnected expediently with field wire (reinforced copper wire) thus creating an independent data and voice network to allow affected communities to exchange video, email, voice and other data sensory information.

An issue which arises at the site of major disasters is the sheer number of personnel needing to communicate with each other. The presence of multiple government agencies and NGOs often results in their duplicating each others efforts and, more frequently, being unable to provide aid and relief due to unavailability of one or the other infrastructure. The P3 system, being compatible with industry data and voice networks as well as with each other, means an agency or NGO can tap in to the P3 communications, from initial through the ongoing stages of operation. The ease with which links are extended between relief camps and actual disaster area of operation, makes it extremely effective to “reach” personnel via voice, data or video, provide full telemedicine capabilities and to offer affected groups communication with the ‘outside’ world.

Future of the Copper Based Transmission

A number of technological developments in copper based transmission ensure a future path for tactical data modems that use copper cables. There is always the predominant factor of its low cost and ease of use and repair when compared to fibre-optic based system. However, advances in new modulation technologies are offering considerably higher data rates as well as bandwidth aggregation. One specific technology variant that was selected as a basis for P3 replacement was SHDSL or Symmetric Hybrid modulation – allowing up to 6Mbps of symmetric bandwidth on a single pair of copper cable. A number of leading chipset manufacturer are integrating 4 SHDSL circuits in one chip; increasing the bandwidth to up to 22Mbps over comparable distance. The Defence Communication Industry is already trialling these new products with the Australian Army with the new product available in the 3Q2010.

Conclusion

Over the period of five plus years of substantial product use in the field by ADF and other customers, it has been determined that a considerable market in both defence and industrial markets exists for this type of product. The decisive factors for this are the dramatic savings in cost, setup and maintenance. Copper continues to be a soldier friendly medium and P3 resurrects its role in meeting today’s communications needs.

While fibre optic will retain its role as the communications backbone, P3s provide an effective alternative to tactical data links on the brigade level and below. Its small size and stand-alone operation make it a versatile means of extending data links especially in harsh terrain where laying

out FOC is difficult. This scenario is especially pertinent to Disaster Relief operations.

In short there is still life left in the old copper cable and in the words of one Australian Army Signaler, “P3 is a WD-1/TT resurrection equipment”.

Australian Field Army Trials Report: “New Technology - WDD A/TT (Don-10) Network”

The Australian Army uses fibre-optic cable to provide a communications infrastructure for logistic support. The fibre optic cable, kevlar-armoured especially for Defence, is an expensive medium and suffers breakages from being caught up in the track link of tanks or broken by forklifts. These accidents, actual events during Exercise Phoenix, normally occur during night under blackout conditions. Although the fibre can be repaired, such repair requires return to base and expensive facilities.

Army traditionally uses Don-10 copper wire strands reinforced with strands of stainless steel wire to carry voice in the field. This cable, capable of withstanding heavy stress, still gets broken but is easily repaired by users. Wire cable deployment is also considerably easier to achieve than laying fibre optic cable. P4 xDSL was employed during Operation Phoenix and Crocodile West to prove an ability to replace fibre optic cable segments with Don-10 on selected long runs.

The following are some first hand impressions and feedback from Army users of the Don-10 technology on Operation Phoenix; “Soldiers understand this and they can fix it” (meaning wire and breaks that occur as opposed to fibre optic cable); “Can I get some more; “This is great”; and “Hey, it works”.

Portable xDSL systems provide data rates over copper or steel cables that are acceptable with significantly reduced capital costs. P4 primary application during Operation Phoenix was to enable a transparent LAN extension within a large logistic area, located in the bush near Tindall.

A number of specific future requirements have been discussed. One such special development is a simple back-to-back xDSL modem, providing the Army with rapid deployment multimedia infrastructure over copper cable. It greatly reduces the cost-per-line factor due to the elimination of the more cumbersome subrack assembly of a standard system. This technology successfully provided the logistic LAN backbone on Operation Crocodile West, 150 km SW of Tennant Creek, when fibre optic breakages and distance limitations proved difficult to overcome.

The WDD A/TT (Don-10) LAN extensions are robust, cost-effective and well-accepted by soldiers. Tempest-rated within the restricted environment, the solution is now a Defence Infrastructure standard within the strategic en-

vironment however it is not yet formally accepted in the tactical arena.

ACKNOWLEDGEMENT

The author wishes to acknowledge those members of the Royal Australian Signal Corps whose ideas and enthusiasm were instrumental in driving this project forward. The people on the ground really do have the best ideas. Also, we acknowledge members of the ADF Field Deployed Logistics: project JP126 for their commercial and technical support from the project inception to its completion. A particular acknowledgment is given to members and management of CISSO (Command Intelligence Systems Support Office) for integrating P3s in to their portfolio and subsequent product management. This paper is dedicated to all Signallers that helped and guided the product development and have been a constant source of inspiration.

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- [7] "P3 Transmission over Copper - Security" by A.Umansky 2003***

*** The above material can be viewed at: www.defence-comms.org

MAJOR GENERAL TG INSHAW CB ADDRESSES THE AFCEA (UK) SOUTHERN CHAPTER



The annual Corporate evening of the AFCEA (UK) Southern Chapter saw a sizeable audience assembled in the historic setting of the Royal Naval and Royal Albert Yacht Club in Portsmouth on 17 March to hear an address by Major General Tim Inshaw, the MOD Director of Information Systems and Services, and Chairman of the Royal Signals Institution, on the subject of "Strategic Communications – Satisfying the Impossible?" Our photograph above shows Major General Inshaw being welcomed to the Chapter by the President, Commander Russell Searle.

The speaker admitted frankly in his introduction that the demand was insatiable, and could not be met. It was driven both by technology and the Common Operating Environment, and he provided sobering examples of how the demand was increasing, together with estimates of where it would go in the future. He highlighted the slowness of MOD processes, the complicated MOD environment and inappropriate culture together with increasing budgetary pressure and the multiple layers of approval needed as contributing towards our inability to meet the demand.

A new approach to acquiring Information Systems was necessary, which was better integrated, more agile and less costly. This had to be matched by a culture change, where we would embrace the new information environment, using a range of initiatives. The speaker concluded with the sobering warning that UK Defence would probably never be able to meet the Information requirement, and this would be the backdrop against which we would have to operate in the future. Afterwards, the speaker answered at length a wide-ranging series of questions from the audience, before being awarded a hearty vote of thanks by the Chapter President.

TRAFFIC ENGINEERING IN THE MILITARY ENVIRONMENT

By Major MC Duff, Royal Signals, 11 CISM Course

Research Question: How can Traffic Engineering be employed in military environments to improve the delivery of services?

This article offers a definition for traffic engineering, and introduces evaluation and optimisation as the processes at its heart. The four stage process model proposed in “Overview and Principles of Internet Traffic Engineering”, [RFC 3272] contains the activities of traffic engineering and some of these are examined in the context of the Information Technology Infrastructure Library (ITIL) Service Lifecycle. The article recognises that traffic engineering cannot improve the delivery of services on its own and that work on introducing Service Level Agreements (SLAs) must be conducted in parallel. It concludes that evaluation can be conducted now but that dynamic optimisation may be impossible to achieve.

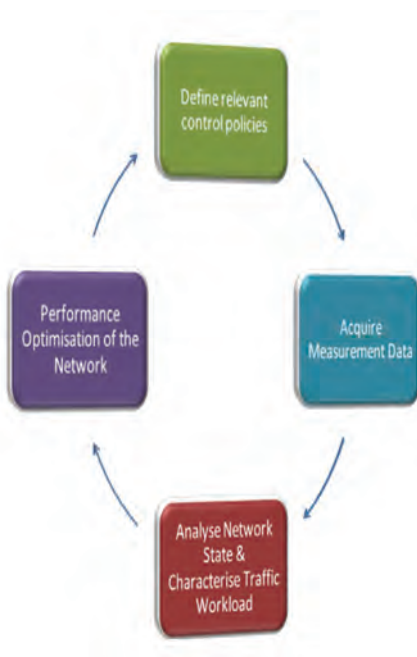
Commercial IT Service Providers have recognised that, in addition to providing networks, they must now deliver services. Within the context of this article, services can be considered to be synonymous with applications. They have been using traffic engineering techniques (OPNET 2010) to evaluate the performance of these services and to optimise the performance of their networks. The requirement to deliver services is also being acknowledged within Defence and so it would be sensible to follow commercial best practice and implement traffic engineering within the military environment.

RFC 3272 (Awduche et al. 2002) illustrated below provides an overview and principles of Internet traffic engineering. It is widely cited and appears to be the seminal work in the field. The RFC introduces evaluation and optimisation as the key processes of traffic engineering. Based primarily on the definition by Awduche et al. (2002), traffic engineering in the military environment could be defined as:

those activities, conducted throughout the service lifecycle, that evaluate the end-to-end performance of services and then improve that performance where appropriate.

The activities in the definition are incorporated into a four stage process model that is contained in RFC 3272 (Awduche et al. 2002) and shown in Figure 1. Stage 1 defines the control policies while the evaluation process is covered by Stages 2 and 3. The optimisation process is clearly Stage 4. Improving the delivery of services therefore involves the acquisition and analysis of measurement data followed by optimisation of the network when appropriate.

The service must have a baseline though against which acceptable performance can be judged in order to allow improvements to be made. When a new service is transitioned on to the network the service developer and the network operator must agree that the Service Acceptance Criteria (SAC) within the SLA have been met. The acquisition activity of traffic engineering can then monitor the delivery of the service and if it drops below the levels set in the SAC, the reasons can be analysed and the network optimised to restore the service to acceptable levels of performance.



The traffic engineering activities can be conducted at various stages of the Service Lifecycle (OGC 2007, p24). Within Service Design, the use of traffic engineering techniques could bring immense benefits. Accepting that services are synonymous with applications, improving the delivery of services can begin when applications are being designed.

Figure 1 : The Traffic Engineering Process Model (Awduche et al. 2002)

The network designers must become involved in the development of applications so that they understand and, if possible, influence the SAC. If they are unable to influence the design such that it can be delivered by the current network

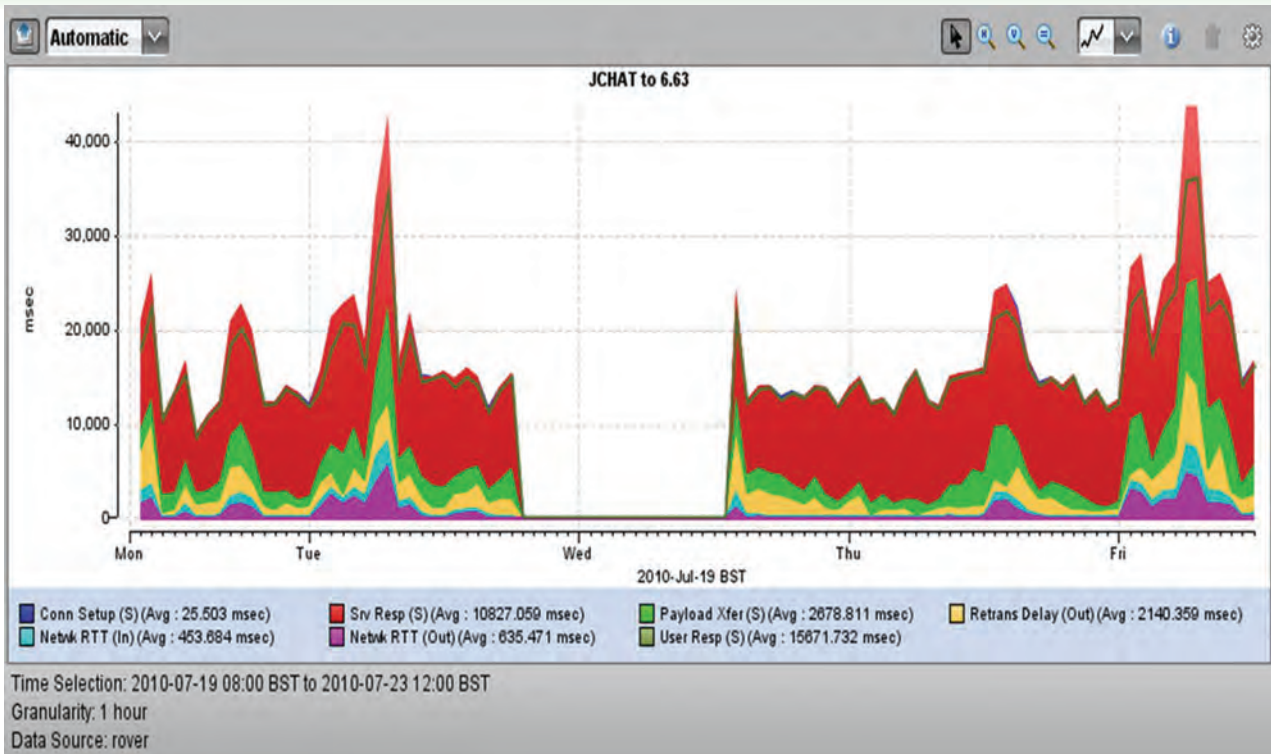


Figure 2 : Example Round Trip Composition Chart (OPNET 2010) The gap in capture data is due to the license key for the software expiring. Once a new key was entered the data capture continued as before.

Then they can at least provide early input to the network planning process to ensure that the network is capable of supporting the application when it is finally transitioned into operation.

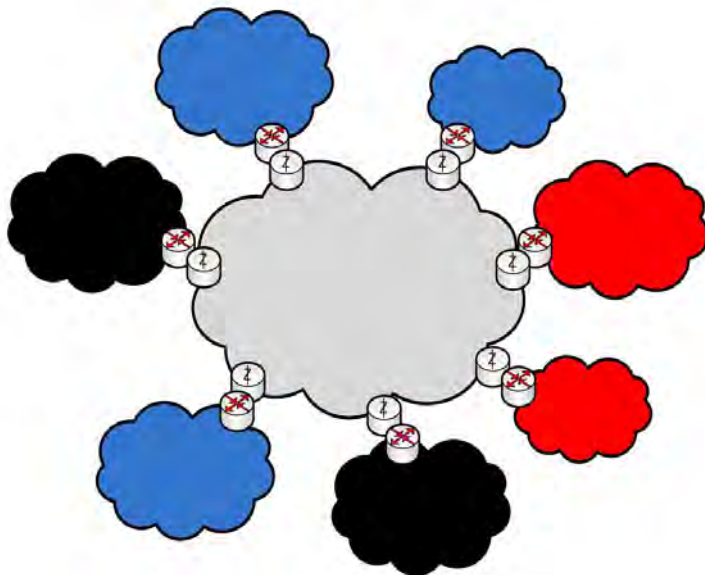


Figure 3 : Different Security Domains within the Network (Duff 2010)

The most immediate benefit of traffic engineering to our military networks will come from the use of the ACE Live software that Defence Equipment and Support (DE&S) Information Systems and Services (ISS) have recently contracted for. The software has the ability to capture the IP and Transport layer header information of all packets that pass through its monitoring ports. It timestamps all capture information and then presents it in various ways to allow a limited amount of analysis to take place. In particular, the option to display network and server response times significantly improves the ability of the network operator to identify whether poor end-user experience is being caused by the network or the application. An example of a Round Trip Composition Chart (RTCC) is shown in Figure 2. The server response time (in red) obviously is the cause of the majority of the delay experienced by the user.

Awduche et al. (2002) see dynamic network optimisation as a real-time optimisation activity within the optimisation process. They describe network devices that are able to recognise time-dependent or event-dependent congestion and dynamically re-configure the network to take account of the increased traffic load, thereby optimising network performance for the services. Although dynamic routing protocols are used within military networks it may be impossible to reach a point where traffic flows can be dynamically managed from end to end. This is because of the requirement for encrypted traffic to be carried across a 'grey' core network between different security domains as shown in Figure 3.

The IP Security (IPSec) Encapsulating Security Payload (ESP) protocol (Kent and Atkinson 1998) is specifically designed to provide an element of traffic flow confidentiality by encrypting the IP and TCP header information of the original packet. Unfortunately this is information that the traffic engineering software needs to carry out its function. While it may not affect the use of the IP Flow Information eXport (IPFIX) protocol (Claise 2008) between different security domains, it may well prevent dynamic optimisation in the core of the network being based upon flow information generated in the attached networks.

Conclusions

The traffic engineering process of evaluation can be employed to improve the delivery of services. It provides activities that measure and then analyse traffic flows which in turn provide information for optimisation.

Dynamic optimisation may well prove to be impossible to achieve but manual optimisation of the network can still improve the delivery of services. Traffic engineering can only improve the delivery of services if they are correctly accepted onto the network. Without SAC for each service on the network there are no baselines to judge performance against and hence SLAs should be a mandatory product from the Service Design stage of the Service Lifecycle.

Further Implications

The use of IPFIX to gather traffic flow information from remote sites would drastically reduce the number of agents that would need to be deployed around the network. Deployment of this protocol would need to be extensively modelled in order to gauge the impact of this management traffic on the general performance of the network. One of the constraints on traffic engineering in the military environment is the requirement to operate in different security domains. The impact of IPSec on traffic engineering techniques, particularly its potential effects on any attempt to implement dynamic traffic engineering using protocols such as MPLS should be studied.

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AN EXAMINATION OF THE STRATEGY TO FULFIL THE UK DEFENCE BEYOND LINE OF SIGHT (BLOS) COMMUNICATION REQUIREMENT

By Major JC Barber, Royal Signals, 11 CISM Course

INTRODUCTION

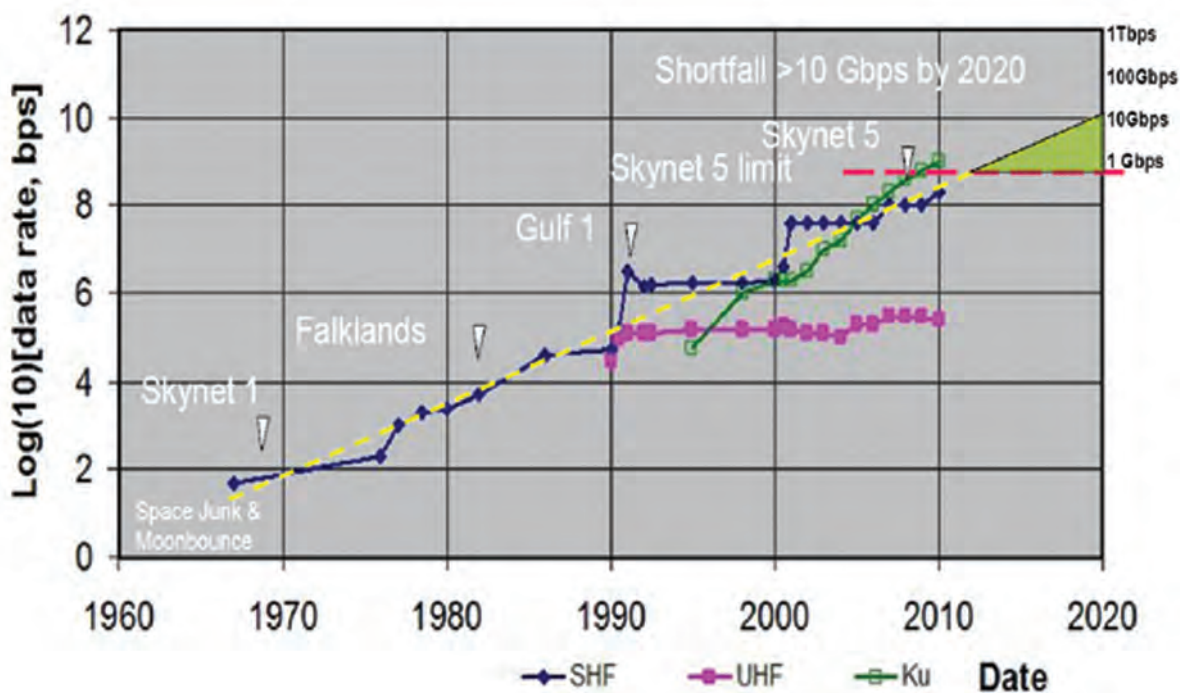
The aim of this article is to inform the reader of the current complexities in delivering a Beyond Line of Sight (BLOS) communication capability. Furthermore, it highlights that the current models and technologies will require significant enhancement and augmentation with new technologies to ensure that future BLOS communication capabilities can fulfil the military's needs.

CURRENT SITUATION

UK Defence's reliance on satellite communications, not only as a primary reach-back means of communication for operations, but also as secondary means for overseas bases, highlights the importance of Beyond Line of Sight (BLOS) communication capability. However, the year on year rise in demand for BLOS communication services, which is not solely attributable to operations, presents a problem which may not be single-handedly solved by satellite communications.

Figure 1: Rate for UK Mil SATCOM: Historical Projection (Grace et al 2008).

Figure 1 demonstrates the scale of the issue, and suggests that based on historical evidence the year on year growth is



1.6 orders of magnitude. Future predictions, based on upcoming equipment programmes and Op HERRICK enduring, suggest that the growth rate could be as high as 2 orders of magnitude year on year (Tozer 2010). Even with the recent contractual agreement to expand the capacity of the Skynet 5 satellite constellation, by 2022 UK military demands for BLOS communication will be sixteen orders of magnitude greater than the capacity of the current system. This means that instead of three satellites, Skynet would require 120 satellites to meet this requirement. If this demand continues to grow at a similar rate then by the end of the next satellite lifecycle (a further 15 years – 2037) UK Defence would require 30,000 Skynet satellites to fulfil that requirement (Tozer 2010). This is neither feasible or affordable.

EMERGING TECHNOLOGY

The telecommunications industry evolves and develops at an alarming pace and, historically, has always been capable of meeting the challenges of future requirements. However, in this instance, factors exist that limit the ability of technol-

ogy to expand to meet the BLOS requirement. Current frequency and band allocations are constraining in their nature and although modem and waveform enhancements are likely to develop to deliver faster data rates, these will not be sufficient to meet the total demand.

Current UK Defence policy stipulates that all UK military SATCOM be transmitted across military X band services. Given that this band is only 500 MHz wide, and shared by all coalition partners, there is a limit to its effectiveness in the ‘cluttered’ skies above a particular operational theatre. Other bands are already used to provide military services and although this is not mandated by policy, it has been borne out of necessity. The L and Ku bands are dominated by commercial providers, who represent another avenue for delivery, but the replacement satellite capability for the US DoD has highlighted the potential for exploitation of Ka band. Air Force Space Command (2010) have launched a series of cross banding Ka-X band satellites, each offering a maximum of 4.875 GHz, a step change in capability. Additionally, the Australian military collaborated in this project and, even as a minor partner, stand to benefit greatly from its implementation.

Accepting that current policy does not reflect the realities of the modern BLOS communication environment the following model could be used to define the service best suited to the requirement.

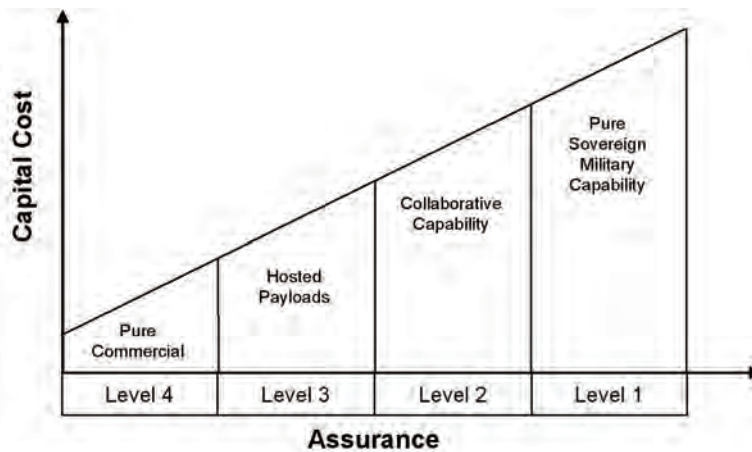


Figure 2 – Four Levels of SATCOM Delivery

SATCOM service provision should be dictated by the required level of assurance. Adoption of this model would allow for a flexible delivery strategy for all SATCOM, but relies heavily on the knowledge of future programmes and their requirements. Additionally, it would allow for an incremental delivery of satellites, as opposed to the current ‘big bang’ strategy, and leveraging of commercial and coalition partners’ research and development.

Satellites may not be the only platform for BLOS communication. Unmanned Aerial Vehicles (UAVs) are a prevalent capability and their role is expanding. Future UAVs will be active network nodes, capable of distributing their intelligence product without the requirement for ‘reach-back’ communication. Nonetheless, their operating altitude would be of little benefit, except to extend tactical networks. High Altitude Platforms (HAPs) are used in a limited fashion currently, but their modus operandi is better suited to BLOS exploitation. HAPs could be manned or unmanned, planes, balloons or even airships. Payloads can be as much as 1000 kg and their persistence can extend to weeks, even months. The nature of the communication system is dictated by the platform (total payload mass and on board power storage/generation capability), but the potential exists to deliver broadband services to the tactical user and keep operational traffic in theatre and reduce the reliance on satellite connectivity.

Implementation of new propagation and networking techniques, such as hybrid RF/Free Space Optical (FSO) communications and IPv6, offers a significant growth in potential data rates and network management respectively. There are challenges in meeting the future demand; integrating legacy networks and equipment, delivering services to mobile users, cryptography, low bandwidth user communities to name a few, but emerging technology is still evolving to meet these challenges.

SUMMARY

As demand for BLOS communication services continues to grow and the likelihood that current solutions will be able to meet the future requirement diminish, new methods of BLOS communication delivery must be sought. Satellite communications will remain a significant part of the mix, but the BLOS communication landscape must evolve and platforms, such as HAPs, techniques, such as FSO and IP networking and collaborative ventures must be invested in so that future capability can meet the requirements of tomorrow.

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CIS TDU TRIALS PROCEDURE MODELLED AS A SOFT SYSTEM

By Major J Malcolm, Royal Signals, 11 CISM Course

An important stage in the lifecycle of any military capability is the acceptance trial. Based on the requirements set at the very beginning, this trial should be the confirmation that the end user is getting what he wants. A great many factors have an influence on this process, chief of which is the complex, interdependent and often ephemeral nature of CIS capability.

The organisation responsible for conducting trials on CIS capabilities within the LAND environment is the CIS Trials and Development Unit (TDU). As part of the Command Support Development Centre (CSDC), its Mission Statement is as follows:

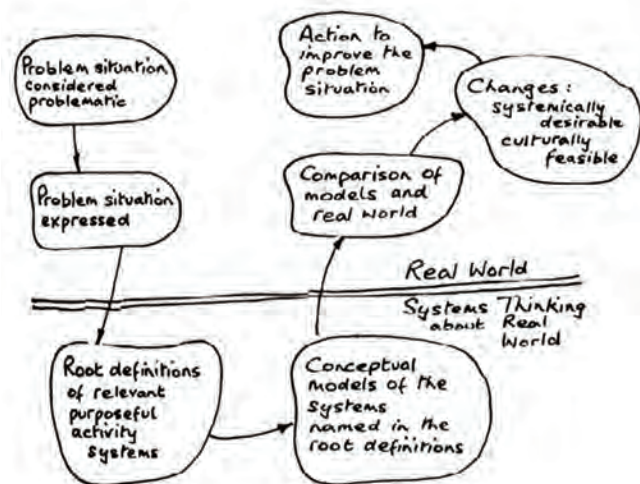
Test, trial, develop and evaluate deployable command support ICS and EW.

CIS TDU conducts predominately user trials on behalf of the Sponsor. As a result of the scope of its mission, historical tasks and a complicated command structure, it also conducts a wide range of smaller tests and trials, developmental work, some experimentation and other tasks as they arise.

The existing Defence guidance on acceptance does not cover the actual trial in any great depth. It is also mainly focussed on more conventional capabilities and gives little extra detail on the complexities of CIS trialling. Existing Army knowledge is based on experience and best practice and is not doctrinally recorded. The task therefore is to establish what guidance exists, how it applies to CIS TDU, if at all, and what better ways might there be to conduct their business.

In order to address this problem, a Checkland (2005) flavour of Soft Systems Methodology (SSM) was used. This consists of a 7 stage process, shown opposite, to define, model and examine a situation. The examination is intended to improve the understanding of the situation and enable insights to be gained. These insights are then used to derive potential changes, and ultimately action to improve the situation.

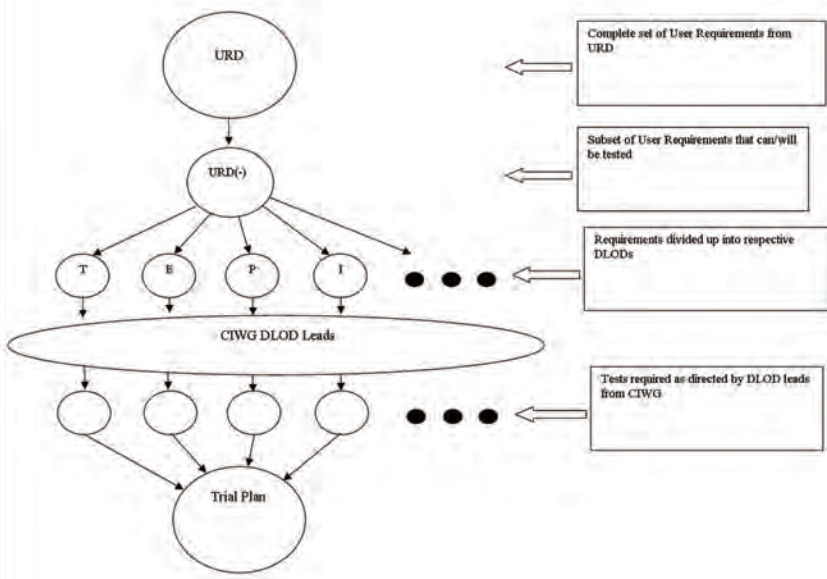
The 7 stages are followed in a rigorous, yet iterative manner, using each previous step to inform and develop the understanding of the next step and the situation as a whole. SSM was chosen to conduct the analysis of the situation due to its rigorous and structured approach. With a potentially large, complex and politically sensitive situation, the key advantage of SSM is that it initially constrains your thinking before expanding it (Williams 2005). SSM is also good at bringing clarity to situations with many activities and goals as it breaks the situation down into different perspectives before identifying areas where improvement can be made.



There is a danger with using SSM that the actions arrived at by the end of the process have become too detached from reality to be of use. The involvement of stakeholders throughout the process is vital to ensure that any interventions are of practical application. Three case studies were undertaken to add technical and intellectual rigour to the conclusions of the project. Two military case studies; one large, complex but conventional, and one small, self-contained but unusual. The NHS National Programme for IT (NHS 2010) was selected as a civilian example of a large, complex and interdependent CIS program with a particularly sharp user focus.

The study of the situation developed some particular insights into the operation of CIS TDU and the wider process of acceptance. A trial can only be successful if the capability under trial is an assured one. This means that while it may be unproven in the eyes of the user, the supplier believes it to fulfil all the requirements set. A model was developed to illustrate the process of extraction of information from the supporting documents, the involvement of the Capability Integration Working Group (CIWG) as a stakeholder and the writing of the trial plan. Based on this model a number of clear pre-requisites were identified for the process to work:

- The URD must be up to date, and sufficiently detailed to extract measurable information on which to measure the pass/fail criteria of the tests.



- The CIWG must consider trialling as a central, critical activity, and the Defence Lines of Development (DLOD) leads must be aware of their responsibility in framing the required tests in their areas.
- The Acceptance Authority, or the CIWG, must give direction to the TDU as to the composition of the subset of the URD that will make up the trial.

The definition of a trial in most of the existing guidance is simply as a series of tests. The insights gained in this stage consistently returned to the need for a trial to be a more holistic approach than these definitions imply. This holistic nature is especially important in CIS trialling. In order to trial a CIS

capability, other CIS equipments will be required. The essential complexity that this introduces in terms of the interoperability of the different capabilities is compounded by the complexity of the extra equipments. A holistic approach will take this into account, and minimises the normal risks of CIS trialling connected with the inability to do all-path testing in most circumstances.

An activity that would doctrinally be excluded from an acceptance trial, but that CIS TDU frequently undertakes is that of solving problems discovered during a trial. Great effort is taken by those conducting the trial to limit this activity to those problems that would prevent the trial from proceeding. Any other problems are simply documented for the trial report. These insights informed a number of key recommendations that were systematically desirable. Some of these were not entirely culturally feasible, due to the involved bureaucracy, limited budgets or that they were simply outside CIS TDU's control.

- While the specific guidance for trialling CIS capabilities is limited, CIS TDU's case by case approach works well and would not be improved by a dogmatic adherence to the Acquisition Operating Framework (DE&S 2010). It is the perception that this flexible approach is wrong that should be addressed, not the approach itself.
- CIS TDU can and do conduct activities beyond mere trialling, and trial sponsors frequently expect this. Problems only arise when there are misconceptions between CIS TDU and trial sponsors as to the activity expected. Early identification of the required output from an activity is key to resolving this sort of conflict.
- A formal set of Standard Operating Procedures (SOPs) would be of limited use to CIS TDU due to the varied nature of their activity. A higher level directive would provide clearer direction while allowing the ability to tailor the approach to the requirements of the task.
- Far beyond the scope of the project, but with the potential to resolve a great many of the issues identified is the possibility of forming all the TDUs into a unified Army trialling organisation. This idea could be logically extended to encompass all the MOD trial, test and evaluation organisations into one chain of command.

In conclusion, CIS TDU is an effective organisation, that delivers results in complex and often confusing circumstances. A wider understanding of their capability, and a slight formalisation, without losing the flexibility, of their current approach will enable efficiencies and more rigour in their output.

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EXPLAIN HOW TO MAKE THE BEST USE OF THE ROYAL SIGNALS TROOP COMMANDER IN THE CONTEMPORARY OPERATING ENVIRONMENT

By Captain CP Goslin, Royal Signals



Chris Goslin was commissioned in 2006, and has served in 14 Signal Regiment (EW), the Falkland Islands and with 2 RIFLES. he enjoys skiing, climbing and mountaineering. This essay was the winning entry in the 2010 Deane-Drummond Essay Competition

Introduction

Given the recent experiences of the British Army on operations, in Iraq and Afghanistan especially, it has become clear that a military based on the conventional threat of the Cold War is not set up to deal with the challenges of the Contemporary Operating Environment (COE). This combined with developments in communications technology has led to the Royal Corps of Signals reorganising to better deliver communications to the battlefield. (i) Due to a number of new systems that have come into service less people and equipment can deliver more capability and the nature of the COE means that small detachments are often spread widely around an operational theatre, commanded by Junior NCOs. The traditional roles of the Royal Signals Troop Commander have in some cases become obsolete and in others have been taken over by other people.

This essay will discuss how the role of the Troop Commander has developed in recent times, how the role differs from being a Troop Commander in barracks and on operations and where the Troop Commander's role should develop in the future.

The Contemporary Operating Environment

The COE is very difficult to define due to its changeable nature however a list of six variables has been developed by the US Army Training and Doctrine Command to describe it: Physical, Political, Economic, Human, Military and Information. Although taken in turn each is relatively self explanatory:

All are inter-related, with each one assuming greater or lesser importance depending on the situation. As the extent and influence of each variable changes with time, so the operating environment changes. (ii)

This is obviously a complex environment within which to operate and is cleanly summed up by the "Three Block War" concept in which a force can be "confronted by the entire spectrum of tactical challenges in the span of a few hours and within the space of three adjacent city blocks". (iii) Although this is a good way to depict the COE the reality is that this scenario is further complicated by the fact that this is not just three adjacent blocks in a neat line. It is more often a 360 degree complex battle space, with a mixture of urban and rural features, in which different types of enemy forces, friendly forces, civilians, and various organisations will all operate simultaneously.

The challenges to communicating within the COE are many and complex. There is a greater need for interoperability between coalition forces, there are limitations on access to good communications sites due to the lack of a front line and there is the requirement for secure voice and data to much smaller sub-units than was ever needed in a conventional war fighting scenario to allow situational awareness to all commanders in this complex environment. The communications infrastructure is spread widely around the operational theatre and is often difficult to secure without working closely with the infantry to fit in with their lay down. This is by no means an exhaustive list of the issues however it highlights the difficulty of not only operating as soldiers in the COE but also the complexities of operating as communicators in the COE.

Officership

Despite the nature of the environment having changed (and thus the role of the Troop Commander needing to change) there is no reason that the nature of the Officer should change. The core of what it means to be an Officer and the intangible benefits of having an Officer in command of his or her soldiers must not be forgotten during the argument to find a 'tangible' role for the Officer on the battlefield. The ability of an Officer to stand at the head of his Troop and embody the "Pillars of Officership": "Command, Responsibility and Example: [which] must rest on the foundation of a firm conviction in the values that are enshrined in the Ethos of the Army"(iv) is what makes him a vital part of delivering any effect in any environment. Although an Officer may not bring a specific trade to an operation he still provides a capability to the Troop and supported units:

Military Command at all levels is the art of decision making, motivating and directing all ranks into action to accomplish missions. It requires vision of the desired result and an understanding of concepts, missions, priorities, the

ability to assess people and risks and involves a continual process of re-evaluating the situation. (v)

This is what Officers are trained to do and the responsibility that they take on by accepting the Queen's Commission. The Troop Commander is a vital piece of a deployed soldier's welfare chain. The Officer will have commanded his soldiers in barracks, got to know them and established a bond of trust and understanding with each of them:

A Commander... need not be a close observer of men, a sharp dissector of human character, but he must know the character, the feelings, the habits, the peculiar faults and inclinations, of those whom he is to command. (vi)

It is with this knowledge and experience of each soldier that welfare issues can be dealt with quickly and with minimal impact to a soldier's future or the operation. This is even more important in the COE where the pressures of short bursts of intense violent activity are often followed by peacekeeping operations. This quick change of mindset can cause lasting psychological damage if the soldier is not well managed and looked after at the earliest opportunity. For a Royal Signals Troop Commander the day to day command of a Troop is complicated and diluted by the fact that his soldiers are spread widely around an operational Theatre, often under tactical command or control of another unit. Although delegation of command is a vital skill to have as a Royal Signals Troop Commander it should not be forgotten that the overall responsibility for providing the Troop's capability (whether communications or Electronic Warfare (EW)) to front line commanders should rest with him. This responsibility runs from the training of the Troop in barracks to the deployment and sustainment of that capability in theatre, to the safe recovery of all of his soldiers:

Responsibility... can only reside and inhere in a single individual. You may share it with others, but your portion is not diminished. You may delegate it, but it is still with you. You may disclaim it, but you cannot divest yourself of it. (vii)

These reasons alone should be enough to justify the deployment of a Troop Commander on operations with his Troop. If his Troop are expected to perform their roles under the complicated pressures of the COE then they should expect that their Officer should share this experience with them. There is very little value in a Troop Commander who trains his soldiers to deploy on operations and remains in barracks while the war is going on elsewhere. A civilian could achieve this.

The Current Roles of the Royal Signals Troop Commander

In barracks the role of the Royal Signals Troop Command-

er is relatively straight forward no matter what task a Troop has. It is the leadership and management of people and the maintenance of equipment in order to achieve an aim or mission. On exercise the Troop Commander's job changes dependent on the role of the Troop. An EW Troop Commander will coordinate the positioning of the EW sensors under his command and the second line analysis of intercepts, whereas the Troop Commander of a Brigade Headquarters Troop will be responsible for the entire Brigade Headquarters site from the communications infrastructure to the administration of the site. These roles are well defined within the respective units but only for conventional war fighting scenarios. When the same formed units deploy on operations these roles are often very different, the Troop will be restructured and will, nonsensically, involve the Troop Commander having less responsibility. For example a lot of the responsibility that a Brigade Headquarters Troop Commander has on exercise in the UK is divided, on operations, between the camp quartermaster (for life support issues) and the Brigade Yeoman of Signals (for communications issues).

On operations the Royal Signals Troop is often split into small detachments which are moved around to provide communications support to other units. This often consigns the Troop Commander to an office in Camp Bastion or Lashkar Gah creating an R&R plot for his Troop and force generating detachments as the situation requires. This can hardly be considered leadership, this is man management. If anything technical is required from a Troop Commander he will invariably be supported by a technical SNCO who will do most of the work required. If a Troop Commander is not very technically minded (or interested!) he will often find that the most useful thing he achieves in a six month operational tour is a well timed coffee and donut run for an incoming team or a busy SNCO. It seems that there is a desire to separate the Troop Commander from any technical decision making or planning despite the training that they get in Sandhurst, Blandford and at their units.

This is especially relevant to FALCON which will directly replace the capability provided by Ptarmigan. What Ptarmigan could provide with a troop of soldiers and vehicles FALCON can provide with two vehicles and a handful of soldiers. A number of Ptarmigan trunk nodes would be commanded by a Major and coordinated by a Squadron Operations Cell. A number of small FALCON troops would not be a practical solution to this problem however there is some concern that command of a number of FALCON 'nodes' would be too much responsibility for a young Officer.

Small detachments from one Troop being spread around an operational theatre means that a Troop Commander loses touch with what his soldiers are going through and how they are coping and performing under pressure. Junior soldiers are exposed to senior Officers, often from the

teeth arms, who may have very little understanding of communications issues. It also exposes the same senior Officers to very technical soldiers who know a lot about communications but find it difficult to express their issues in succinct, non-technical terms. These soldiers will also often lack the 'big picture' understanding of where the communications piece sits in the commander's plan and priorities.

Where Should The Royal Signals Troop Commander Be?

The Troop Commander's key role should be the leadership and management of his Troop. It is the overarching responsibility of a Troop Commander to ensure that all of his soldiers make it back home alive and in a good state after a job well done. This is difficult to do from a static location in an operational theatre.

The Troop Commander should also be able to provide 'top cover' for his soldiers on their detachment to other units. He should also have an in depth understanding of all communications deployed. This is so that he can translate complex communications issues into simpler terms for non-technical officers and so that he can provide sound communications advice and briefings to whoever needs them. The Royal Signals are spread thinly throughout a COE and an Officer can provide valuable advice to senior commanders.

These requirements of a Troop Commander imply that his role is mobile. He should spend as much time as possible with his various detachments and their supported units. This would enable consistent personal leadership of a Troop, firm relationships to be built with the commanders the detachments are supporting and an understanding of how the Troop can better provide communications support to the various locations.

... here is the great use for British Officers... Their personal influence should be made more of. The fullest use should be made of our prestige, our unrivalled experience, and the natural capacity for this kind of work. (viii)

Because of the much more technical equipment being used by the Corps it is imperative that a Troop Commander is technically very capable. He should be trusted with the provision of communications to a number of sites around the COE. With previous equipment this would have been the domain of a Squadron OC however it is time that we trusted the ability of the Troop Commander to take this responsibility. Also because a Troop will be so tight on manpower the Troop Commander should be able to operate the equipment when needed. No longer can a non-technical Royal Signals Officer hide behind his Troop as sometimes they will not be there.

This way of working as a Troop Commander in the COE,

mobile and engaging with all elements of the deployed force, would also prepare young Officers for more challenging jobs further on in their careers. They would gain a better understanding of more aspects of the Armed Forces as a whole and develop into well balanced communications Officers with an in depth knowledge of the operational picture.

Summary

Royal Signals Troop Commanders are now working in a much more diverse and complicated environment. The important thing when considering the role of the Troop Commander is that the basics of Troop Command remain the same no matter the environment. All that has changed are the methods required to exert their influence.

There are challenges posed by the COE and more advanced communications equipment but Troop Commanders need to be able to command despite the fact that their Troop is spread out in small detachments all over the operational theatre. This means that they need to be mobile and able to have a quick impact as they may not spend much time in any one place.

They must know their soldiers better than they ever needed to before to be able to quickly notice the subtle changes in them when they are under pressure. They need to have an in depth understanding of the G3 picture, how to best support this and they need to know the equipment better than they have ever needed to before as they will be looked to for advice by commanders wherever they are. They need to be personable and robust enough to provide adequate top cover for their soldiers and sound advice to the supported unit and they need to be technically minded in order to be credible to their soldiers and credible but understandable to others. All of this, and they still need to be able to perform the basics of man management.

The Troop Commander's role is wherever his Troop happen to be. This is difficult in the COE but Troop Commanders must be used to command and, most importantly, lead their Troop:

Our British soldiers are capable of anything if they are well led. (ix)

- i. Royal Signals Information Note 01/08 "The Signal Officer In Chief's Vision For The Corps" dated 17 Jun 2008.*
- ii. Doctrinal Note 07/01 "The Contemporary Operating Environment" authority: Msn Sp Gp LWC.*
- iii. Gen Charles Krulak USMC.*
- iv. The Queen's Commission A Junior Officer's Guide.*
- v. ADP 2 – Command.*
- vi. Carl von Clausewitz "On War", 1832.*
- vii. Land Operations.*
- viii. Colonel Sir Francis Younghusband "The Light of Experience", 1927.*
- ix. Field Marshal Bernard Law Montgomery (Taken from Mark Urban "Generals" 2005)*

EXPLAIN HOW TO MAKE THE BEST USE OF A ROYAL SIGNALS TROOP COMMANDER IN THE CONTEMPORARY OPERATING ENVIRONMENT

By Captain Neil Pollitt, R Signals



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Introduction

We are currently in a flux of uncertainty in the way we presently fight wars and the way we will conduct war fighting in the future. The concept of 'irregular' war theories like Rupert Smith's 'war amongst the people' are becoming more of a focus and the reminder for conventional armies to not mirror-image their opponents has been routinely bracketed. Therefore if wars are changing, surely we the people must change with them. Failure to adapt our tactics, our understandings of the current situation or our training will leave us as an intelligently weakened force. Failure at this level will weaken one of our major strengths; the utilisation of the soldier on the ground. Technological advances come what may, without a quick thinking, adaptable individual on the ground we will always be on course to fail.

We are all in agreement that the military threat from the Warsaw Pact has been radically replaced by a wide spectrum of challenges and uncertainties that this country might have to face. For defence forces, this spectrum ranges from the prospect of high-tempo war at one end, through counter-insurgency, stabilisation and peacekeeping operations, to counter-terrorism, aid to the civil power and emergency planning for events as domestic as flood relief. For the Corps it is very simple. We must ensure that we stay one step ahead of the game when it comes to Information, Communication Systems (ICS). Therefore in order to provide an answer to this question we must firstly

establish where and what the Contemporary Operation Environment (COE) is and finally establish the Troop Commanders make up. This essay not only places an emphasis on the different COEs and threats but establishes the underlying Troop Commanders roles and responsibilities in general. To understand what these roles are will establish to what degree we should be utilising the Royal Signals Troop Commander (RSTC) in the COE but more importantly whether we should be seeking to change their roles.

Contemporary Operating Environment

Within the UK Doctrine Centre's paper on the Future Character of Conflict in relation to warfare within the confines of 2014 and 2029, one evolving scenario becomes apparent. Warfare will be fought and won utilising new technology and this will come in the form of communications, cyber-attacks, detection equipment and electronic warfare but to name a few. The UK must therefore ensure that it does not lose its technological edge on the battlefield but be at the forefront of all future concepts.

However, technological capabilities are of no use to future Armed Forces Commanders unless we have the right people in the right job to firstly operate these systems but more importantly execute command and control of these highly influential systems. This is where the Corps must firstly identify the right qualities within its required Officers and secondly continue to ensure they are placed into the right technical niche areas. Operations are now coming under the fold of "stabilisation", in which more indirect, irregular methods of warfare, such as the controversial "cash for ceasefire", are used instead of "kinetic" fighting. As has been highlighted on numerous occasions since 2003, today's world is a turbulent and uncertain place. The armies of today must be prepared to meet the challenges of any type of operation, in a range of physical environments, and against all kinds of threats, simultaneously. We should never shy away from the possibility of high intensity conflicts and should always be prepared for this.

What we need to address and are now doing so is how we train and prepare our soldiers to cope with the COE variables. The US Army Training and Doctrine Command (TRADOC) focused on developing a range of scenarios that provide an adaptive training environment that reflects today's type of operations. These can also be used in parallel with either enduring operations ('The War') or short term operations ('A War'). COE variables consist of Physical, Political, Economic, Human, Military and Information and are inter-related and overlap. They also vary in importance depending on the situation on the ground which calls for a Commander at all levels who can quickly and confidently adapt to given scenarios.

With overwhelming firepower, Western armies rarely lose in combat to Taliban fighters in Afghanistan but in the communications battle, the militants appear to hold

the edge. Such dramatic statements are a huge blow to Coalition Forces who pride themselves on having a coordinated strategic communications package and regularly spend billions achieving this. But this is not just the case in Afghanistan.

British Forces operating in Northern Ireland and Iraq faced a technological threat from basic systems such as FM transmitters and the internet. Even with battlespace capabilities on the increase, for example the development and implementation of a Pilot Battlespace Spectrum Management System (PBSMS), the requirement will always be for these systems to be controlled and managed effectively to allow Force Commanders to use them as part of the warfare initiative.

Unfortunately we are still looking at a British Army that went into Iraq in 2003, as an Army still largely equipped and shaped by the legacy of the Cold War. Regardless of up and coming technological advances in communications, the COE that the British Army remains extensively enmeshed in are remnants of the post-communist Balkans, Afghanistan, Post-Colonial Sierra Leone, the Falkland Islands and Northern Ireland. Each has its own type of Information, Communication System (ICS) and therefore still requires a Troop Commander that is able to work under the pressures of that environment but can also command experts and become an expert themselves on project management.

Tactical communications systems play an important role in present military operations. Proper communications are a must for interoperability between allied troops, however, for the present and future security and defence policies we must remember that interoperability is not only required for the forces themselves but between our forces and others, for example civilian security and public safety authorities. This in itself establishes the fact that the COE is an inconsistent parameter and the operational requirements fluctuate at all times. Dealing with other players, like the European Commission, NATO, and other member states within the European Union, as well as government officials and civilian security authorities at home, requires a Commander with the skill set to be able to deal with this. Therefore the RSTC must evolve from the once “downward looking and upward thinking” Commander to the “encompassing” Commander who can manage a whole host of people, equipment, resources and budgets.

Royal Signals Troop Commander

Major General Marriott, the current Commandant of the Royal Military Academy Sandhurst, stated recently the need to “deliver systems here so that we can change faster than the enemy.” This ties in with the need to establish, within each COE, an adaptable, professional and dynamic Commander, capable of facing the new signalling challenges offered up by Hybrid warfare and deal with the new

signalling solutions offered up by new technology. Situated within each COE are Subject Matter Experts (SMEs), who in their own right, have far more knowledge and experience than a young RSTC. These individuals range from a newly trained Signaller (Sig) to fully experienced Warrant Officer Class II (WOII) who will either know more about the equipment they are working on (Sig – Cpl), how to manage young soldiers (Sgt – SSgt) or how to manage the assets themselves (SSgt – WOII Supervisors).

The RSTC on the other hand is seen by the SMEs as providing, firstly the “Top Cover” when required and secondly learning from those at the coal face. This has generally been regarded as the definitive view of RSTCs by all ranks within SMEs in the past and this is a perception that will be hard to change in the future. Many senior Warrant Officers and Late Entry Commissioned Officers will remember with fond memory the young Second Lieutenant who lay side by side with him de-rusting springs on a 4T truck and teaching them the basics of working in a Secondary Access Switch or Radio Relay Detachment. Commanding Officers will also look back at his stage of their careers and realise how valuable this basic level of development was, how they discovered what made their soldiers tick but more importantly managing the assets they operated. Little should have changed in today’s climate, as this is surely how you gain the experience of firstly the operating systems we currently work on but secondly and more importantly your men and women under your command. The basics never change; it is the roles and responsibilities that need to be evolved as situations and COEs change.

Troop Commanders who currently work out in the current COE of Afghanistan do so in a plethora of roles. They are very much at the forefront of managing the people who run the Networks and in the majority of cases deal with the various systems and projects themselves. They are the liaison with Senior Staff and their ICS requirements, carrying out local project jobs, which require liaison with ISS and PJHQ, as well as carrying out the normal Troop Commanders G1 duties that go hand in hand with their responsibilities to their soldiers they command. Taken out of this COE after a 6 month tour and then either working in conjunction with the civil authorities within the UK as part of a MACC operation, Commanding a Troop introducing a new generation tactical communications system, such as FALCON or establishing a commercial off the shelf (COTS) system for a specific COE requires that “encompassing” type of Commander that we strive to identify at institutions like University Officer Training Corps (UOTC) and Sandhurst Military Academy.

Is the Troop Commander of today just a leader, a manager or both? Leadership is defined as visionary combined with persuasion, example and understanding. Management requires the ability to plan, organise and execute the business of defence. Therefore is the Troop Commander falling into line with many of today’s private sector business

managers? The role of the Troop Commander is not just unique to the military, just the title.

To gain an insight into best practices we have a duty to study and extract how others view and develop their line managers and middle managers. In modern businesses throughout the UK, Senior Management have realised the need for change throughout its workforces, predominantly at manager level. In the early stages of 2005 the middle manager was frequently declared “extinct” and/or made redundant in modern organisations. What decision makers or the Senior Management failed to grasp was who would then take responsibility for those management quality tasks that need dealing with. Forward thinking companies then decided to utilise those newly appointed university graduate managers into these roles as a more facilitative supporter within his department. They still need to be directive and decisive but they can no longer use an autocratic style.

The role of manager has therefore evolved over the past 30 years but one constant, however, is that managers are employees held accountable by their superiors to make sure they deliver in line with expectations. Managers in turn need to make sure that people reporting to them also deliver. This requirement places managers in a controlling, decision making position. The big change for managers today is how they carry out their responsibilities in managing people. One of the major factors that has influenced how managers need to behave is that the nature of work has gradually evolved from manual labour to knowledge work. Workers have become much better educated and they do not respond well to being ordered around. They want to have a say in how their work is done and they want to have their views respected. Also, the workers often know more about what to do than their managers. Increasing specialisation and technological advancement has made it impossible for managers to be as knowledgeable as the people reporting to them. This has had a dramatic impact on the way managers must manage people. Instead of telling employees what to do, they need to ask them what they think should be done. Now, managers need to be facilitators as much as decision makers.

This evolving process sits closely with the concept of how we now fight wars. Clausewitz describes war as both a trial of strength and a clash of wills. Industrial war is about the former. War among the People is about winning the battle of wills. The objective is not to crush but to change minds. Our doctrine has changed from Malaysia, through Northern Ireland to the first Gulf war and onwards through Bosnia, Iraq and into Afghanistan.

Using force effectively is not just a matter of having the right forces; you must also have the right direction and must tune the military campaign to the political goals. Is this where we now sit with Commanders and our ‘Cold War’ philosophy on “listen and learn” or should we now

change our current doctrine on Commanders in line with how we fight wars? Troop Commanders in Germany throughout the Cold War and into the late nineties were a generation of “listen and learn” Commanders who concentrated mainly on the G1 element and relied heavily on those below who could confidently operate BRUIN and Ptarmigan. Troops were effectively run and led by the Senior Non-Commissioned Officers (SNCO’s) and young Officers were not fully utilised. The original concept was simply to get things done efficiently. When the focus is solely on getting things done, the Commander could tell soldiers what to do through his SNCOs. The trouble with this concept is you cannot tell people to be creative. They must be stimulated to think creatively and supported in these efforts. These days Commanders should foster innovation as well as continuing to offer a more sponsorship level of management support for their soldiers. This requirement now forces Commanders to be more facilitative than controlling and directive. One must never forget the underlying necessity in war for command and control but this process must be an understanding rather than a subjected process.

Best use of the Royal Signals Troop Commander?

As a young military intelligence officer in Kenya during Mau Mau operations in 1953, General Sir Frank Kitson had to develop different initiatives to facilitate the ever adapting techniques used by the terrorists. He basically had to throw the rule book away on what and how he had been taught, on the current COEs of the 50s and contain the situation during this uprising. What he did not throw away was the underlying principles of ‘Officership’ that been taught to him at Sandhurst which allowed him to adapt and evolve in this uncertain environment. This young Lieutenant went onto to be promoted to Lieutenant General and take over as Commander Force Development and Training, the new organisation for the development of the Army’s own doctrine.

This is the idea of Chief of the General Staff, Sir David Richards, who has made no secret of his determination to complete the Army’s transformation from Cold War thinking to that required for the new age of military indeterminacy. To achieve successes in today’s COE, Commanders of all levels must firstly understand the importance of the variables that make up the COE and secondly be well practiced in Tactics, Techniques and Procedures (TTPs) that facilitate agility and flexibility when faced with situations across the spectrum of conflict.

Making best use of the RSTC in the COE could be construed as an in depth undertaking that requires a drastic change to our current officer training trends. This could not be further from the truth. Allowing RSTCs the flexibility and responsibility to deal with current situations and trends in the COE must be the principle factor in how we use these Commanders. Infantry Troop Commanders

become extremely respected and experienced at an early stage due to the incumbent nature of their job. They work and live in the same difficult and arduous conditions as their soldiers and constantly put their lives at risk alongside their men. Not only are the Infantry Commanders fighting the Taliban as a matter of course, they adapt to each variable of the COE by understanding the political environment, utilising the media through non-kinetic activities and understanding the cultural and religious differences within that environment. These Commanders are easily adapting to US General David Patreus's call for winning the war on the "hearts and minds" of the people, when necessary. In other words, given the changing scenarios and situations that these Infantry Commanders have to face, this means they have to intelligently exploit and adapt quickly and efficiently.

RSTCs are not in the COE to be Infantry Troop Commanders but in any given situation they will undoubtedly do their duty. What they are there to do is take command and control of the Signal Detachments or Troops that are responsible for the various Networks and systems that the Royal Signals currently run. We have a huge responsibility to the General Staff who control what is taking place in the COE and we must never forget that. This must always be our priority and there must always be a RSTC to provide the necessary liaison to the various staff. However, like the Infantry Commanders, we must give our RSTCs enough rope to carry out the vast range of roles within the COE.

The SOinC successfully introduced the R Signals support to the Infantry in the form of small teams embedded within infantry platoons. Perhaps there is a requirement for an RSTC to be placed within an Infantry Battalion to provide that ICS liaison between Infantry Senior Commanders and ISAF Staff. We have established that the current COE requires a considerable amount of local liaison interaction with various Non-Governmental Organisations (NGOs), local military forces and other International troops. Within this area of responsibility would be the possibility of utilising our RSTCs in joining the liaison teams that are being set up containing elements above. This is utilising RSTCs outside the scope of ICS, but in an environment that is constantly changing, the need to utilise RSTCs in other roles becomes an important factor.

Static Communication facilities that hold a host of supervisors can negate the need to utilise RSTCs and actually lead to the redundancy of the RSTC. Therefore incorporating these Commanders into areas that are becoming strategically more important to Senior Commanders must be a matter of course. The need to win the "hearts and minds" of the people and target the human element of the COE variable means working closer with other agencies and the civilian population. If we believe that the RSTC has become that redundant within the COE then surely this must be another direction that they can be utilised within.

Conclusion

In 1943, after the Normandy landings a Signals Detachment was trying to establish communications between Senior Staff at a Rear Headquarters and Infantry Commanders, who had landed previously by glider and parachute, the night before. Without the means to communicate with these Battalions the Staff would be unable to facilitate an important element of this Operation. The young Signals Officer at the time, under the duress of artillery bombardment, indirect small arms fire and no doubt some very irate senior Staff, successfully provided the necessary leadership and command to firstly establish a working network and secondly provide the liaison required between the detachment and Staff.

COEs will always change and we must continue to evolve with each scenarios. The Royal Signals Troop Commander of today should continue to be utilised within the role they were initially intended to provide. This statement should never be seen as a means of not allowing the RSTC to move forward in terms of what they can be used for but to establish the fact that the RSTC was vital in the COE of 1943 and is still as vital in the COE of 2010. What is important to remember, for those seeking to move on from the current COE, is that when dealing with the next type of potential hybrid adversary, controlling the means on the ground, the air or the sea will still require that vital element of ICS. And within these variables there is still the necessity for a young Signals Officer who is adaptable, professional and dynamic and can provide the command and control element that Corps strives to identify and train in readiness for all future COEs.

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www.cpni.gov.uk/Threat/summary

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Britain's Disastrous Retreat from Kabul – Robert McNamara.

EXPLAIN HOW TO MAKE BEST USE OF A ROYAL SIGNALS TROOP COMMANDER IN THE CONTEMPORARY OPERATING ENVIRONMENT

By Capt P Whillis, Royal Signals



A graduate of Durham University with a Masters First in History, Paul Whillis was commissioned in December 2003, winning the Anson Memorial Prize for best military scores at RMAS. His first submission to the RSI Journal was in October 2004, and he was awarded the Whistler Trophy in 2005. He has served in Cyprus, Iraq and Afghanistan as a Troop Commander, Operations Officer and Squadron Second in Command and at Staff. This entry earned third place in the 2010 Prize Essay competition.

The concept of the Contemporary Operating Environment (COE) has been in development since the 1990s, when General Charles C. Krulak USMC spoke of the necessity of preparing soldiers to engage with 'the entire spectrum of tactical challenges in the span of a few hours in the space of three adjacent city blocks'. The principal threats to British security interests are no longer dominated by the spectre of a conventionally organised enemy, but manifested additionally in the designs of rogue and failing states and of non-state actors with shifting and frequently convergent agendas. The challenge is therefore to train and generate an Army and a Royal Corps of Signals that is 'prepared to meet the challenges of any kind of operation, in a range of physical environments, against all kinds of threats, simultaneously'.

Tackling a brief of this complexity might seem a tall order for a newly-commissioned Royal Signals officer, and little guidance seems to be on hand doctrinally from within the Corps. That none of the referenced Post Operational Reports or the Land Warfare Study refers to the employment of young officers is an indication either that their role is deemed self-evident, or irrelevant, or that it has not been the subject of consideration by commanders.

This essay will suggest ways in which the Royal Signals can better develop young officers, both for their benefit and to enhance the operational effectiveness of the Army in 'a war' as well as 'the War'. It will define the term 'troop commander' as any junior officer, up to and including those in junior captain's appointments, who are still within the first, formative years of ROCC career stage 1.

The question invites a wide range of answers, for troop commanders are not a homogenous breed. Some join the Corps with technical qualifications, ready, for example, to analyse the technological nuances of rival procurement options. Some come as generalists, perhaps with limited initial communications experience but with the ability to articulate complex ideas clearly, or quickly to discern significance in fragmented or incomplete information. The Corps' perspective is that all are useful; but it must take care to develop and employ them appropriately, in order to maximise their effectiveness and future employability in command and in staff roles.

Many of the areas for improvement cited in the essay refer to Post Operational Reports from HERRICK and TELIC tours. While operations in Afghanistan and Iraq are not necessarily models for all future conflicts in which the British Army may be involved, they hold indications of much of what the future might contain. Some conclusions can immediately be drawn from an initial review of the problems posed by the COE, and are best summarised as 'tactical' and 'technical'. The first observation is that the lack of a FLOT, low coalition force density ratios with respect to geographical areas of responsibility, and restrictions imposed on free movement by an often indistinguishable enemy, militates against the utility of the manoeuvre headquarters and trunk nodes that were the troop commander's Cold War fiefdom. Current headquarters are by necessity static, purpose-built environments guarded by non-Royal Signals personnel. Manoeuvrist doctrine is of little use at the strategic and operational levels against an enemy who is more focussed on the struggle for the will of the local population than on defeating ISAF. At a stroke, many of the tactical duties of a Royal Signals troop commander, such as communications reconnaissance and the siting and defence of the headquarters have been removed, together with much of the requirement for a proportion of the Corps to be employed in providing a life support network for the few personnel actually providing J6 advice to command elements.

This contraction of a troop commander's tactical responsibilities is aggravated by the increasing technical complexity of the communications architecture in the COE. Whilst the tactical problem may be considered purely a result of theatre conditions, the technical dilemma is likely to remain extant in all future conflicts. The management of integrated communications systems (ICS), encompassing IP networks, voice, full motion video downlinks, SIGINT and interoperation with coalition architectures from formation to company group level is dependent on J6 commanders understanding in detail the work of the supervisors who administer the equipments themselves. Young officers without any greater awareness of IP-based communications than the overview provided by the Troop Commanders' Course will struggle to provide a worthwhile contribution in this environment, which is at present is more the domain of more technically proficient officers and supervi-

sors in squadron operations teams. The potential outcome of this reduction of responsibility in both the tactical and technical spheres is a generation of officers who have spent time on operations but have gleaned little understanding of how to deliver J6 operational success. The Corps must not become so focussed on the specific problems posed by the geographical COE that it fails to address this more profound shift, which requires it to produce officers conversant with the demands of ICS management, equal to the challenges of delivering computer-networked operations.

A radical approach would be for the Corps to restrict commissions to those from a technical background, already ripe for employment as CIS professionals. This course of action must be abruptly discounted. Not only would Royal Signals officer recruitment be crippled, but the range of tasks that the Direct Entry officer is best equipped to tackle extends well beyond J6. The following paragraphs will consider these roles, with the product being an officer who has enjoyed a fulfilling junior command that has best placed him or her well to take on duties as an SO3 and SO2 in a variety of disciplines.

Some responsibilities of a junior officer must never change, regardless of the environment. A troop commander must learn quickly to lead and manage his or her soldiers, with diligence and by example. The painstaking composition of appraisal reports, career and welfare management, the maintenance of discipline and a willingness to fight for the troops' best interests are among the responsibilities that must never be abandoned by a young officer. Providing the spark to ignite a troop's or individual's enthusiasm and best efforts, whether on exercise, playing sport or on operations, remain enduring requirements for effective troop command.

It is not sufficient, however, to supplement these duties with only a smattering of specialist knowledge. Although the Corps must continue to welcome officers without technical backgrounds, once they have been accepted, it must be made clear that this is no environment for Luddites. Nor is it helpful to regard troop command as a probationary period prior to becoming a 'proper' officer at OF-2. Infantry platoon commanders do not have this luxury. Royal Signals troop commanders must be thrust into the fight as specialists, advisers, planners and instructors at an early stage. The end state should not be an officer who is employed simply to 'command experts'.

The principal method to address the technical shortfall is to impart to young officers a greater depth of technical knowledge, both initially and throughout career stage 1, in disciplines such as IP, SATCOM and network management. Additionally, effective project management is advertised as a key requirement in a Royal Signals junior officer; it follows that a course such as PRINCE 2 should be delivered as part of, or shortly after phase two training. Similarly, the Signal Officer in Chief's Vision to

exploit 'industry best practice' should lead to delivery of such courses as the IT Infrastructure Library (ITIL) as a mandatory requirement for professional development, not as an optional extra. There is, of course, a judgement to be made in training officers 'just enough, just in time' to guard against skill fade, but the knowledge gained by specific qualifications such as these would be of daily benefit to all units, and would give young officers the sense that the Corps continuously invests in them: something that is currently lacking.

The tactical problem also has a ready solution. The trend towards small teams of Royal Signals soldiers working as specialists TACON supported units on operations lessens the requirement and opportunity for junior officers in some existing posts to closely supervise their soldiers on a daily basis. They are, accordingly, underemployed. The Corps should refocus their efforts towards engagement in those specialist spheres whose significance has developed, or remained relatively unchanged in the COE. One existing discipline is that of EW, where Royal Signals officers and soldiers can and should be trained to deliver battle-winning capability as operators and advisers. Post Operational Reports from Iraq and Afghanistan indicate several more key themes for improvement in Royal Signals TELIC, TFH and JFCIS(A) units. Colonel Warne, Commander JFCIS(A) recently noted the requirement for better Information Management (IM) and Information Exchange (IX) procedures within the Afghanistan JOA. His observation that good IM is considered 'not an Officers' sport' in a headquarters rings true, and is something that Royal Signals junior officers can readily be taught and instructed to disseminate to headquarters staff. In this vein, the employment of two Royal Signals officers within the author's supported regiment reaps daily benefits, abetted by the enthusiastic sponsorship of the infantry CO. While not glamorous, these disciplines are comparable as enablers to sound J4 or J1, which no responsible commander would neglect. IM/IX is something that the Corps should train its troop commanders in thoroughly. It should then direct them to instruct and enforce these procedures within formations and battlegroups.

J6 liaison is another requirement. CO 22 Signal Regiment noted in Feb 09 that greater 'J6 influence is needed across RC(S) and NATO'. Whilst much of this influence requires the years of experience and credibility earned by a supervisor or SNCO, some liaison officer tasks could be deemed suitable for junior officers, who could research problems, run projects, devise solutions, and reach back to request advice from those more experienced if required.

The Land Warfare Centre's Contemporary Operating Environment doctrinal note also stresses the requirement for infantry skills to be maintained throughout the Combat Support and Service Support spheres. Troop commanders, benefiting from recent practical experience in this field at RMAS, have a crucial role to play in this. Too often with-

in the Corps, lip service is paid to military skills serials, with the training priorities being directed by formations towards exercising headquarters staff rather than communications and communicators. The standard of military skills across the Royal Signals is not high. Military training on 18 (UKSF) Signal Regiment's Special Forces Communicators' Course necessarily start at the lowest level to ensure that some students are not left behind. Junior officers must be directed to plan troop level military skills exercises, and to be prepared to execute them whenever the opportunity arises.

An essential and high profile element of operations in the COE, specifically within failing states, is the requirement to train indigenous forces to enable them to take responsibility for their internal security. This has been recognised for years, with the establishment of Operational Monitoring and Liaison (OMLT) teams across theatres, and the attention devoted to staffing the Iraqi Military Academy Ar Rustamiyah (IMAR). The provision of young Royal Signals officers and soldiers to train Police and Army recruits in communications procedures is essential in order to develop comprehensive capabilities. This has been recognised and must continue. The Petraeus principle that 'you can't commute to the fight' encapsulates the idea that success in Security Sector Reform is achieved in large part by simple presence. The Corps must be integral to this involvement to maintain its credibility in the wider Army.

The role of the Regimental Signals Officer is an initially appealing option that should be considered as an option for employing more senior troop commanders. It should not become the invariable default, however. RSO positions within battalions may appear tailor-made to the skills and experience of a Royal Signals officer, and the Corps should be ready to fill them if requested. It is of equal value to the J6 community, however, if the RSO's role is fulfilled by high-flying teeth arm officers as part of their development towards the command appointments. Commanding Officers developed in this way have a greater appreciation of CIS issues, allowing them to make more balanced judgements on communications issues as part of their operational planning.

The Corps should additionally seek to promote the employment of young officers within staff branches other than J6. Given that two-thirds of the career of an officer who serves until age 55 will be in staff duties, Royal Signals officers must be offered opportunities to develop secondary career paths at an early stage, to ensure they do not by default become stovepiped later in their careers as niche specialists with little wider knowledge. Already, the Corps is significantly under-represented at the higher levels of command, which is due in part to a lack of exposure at an early stage to the All-Arms environment. Given the critical importance of robust communications and tactical EW in enabling strike and detention operations, it is vital that J6-trained individuals are integral to all J5/J3 efforts. This

is the natural domain of the Signal Squadron Operations Officer, but as the Corps refocuses towards battlegroups, junior Royal Signals officers should be directed to become intimately involved with the planning and execution of kinetic and non-kinetic operations, on hand to provide both CIS advice and to gain expertise in All-Arms disciplines and battlegroup planning. This is not a model that can be adopted on a whim; together with the Corps' traditionally close links with formation staff, relationships would have to be forged beforehand with battlegroup personalities through integration in mission-specific training. In turn, this would raise awareness of J6 issues amongst All Arms personnel, giving them a better understanding of what the Corps delivers on their behalf.

Particular synergy can be identified between J2 and J6, not least because the majority of intelligence disciplines require a bearer to operate. The concept of a 'J2-6' communications and intelligence specialist deserves development, especially as regards the SIGINT sphere. The terms of reference for RAF Communications Engineers within joint SIGINT and MASINT units provides an existing model that the Corps would do well to emulate.

A refinement of the employment and training of troop commanders is not a panacea that will address all difficulties of providing robust CIS in a bandwidth-hungry environment. This said, the appropriate training and employment of young officers is an issue that extends beyond Afghanistan-focussed analyses of the COE. The Corps must not abandon the employment of young officers as troop commanders, engaged in the leadership and management of soldiers, but it must also afford them sufficient technical training to enable them to become more credible communications specialists, capable of tackling technical issues rather than deferring to better trained and qualified supervisors. This technical development must be partnered by an augmentation of the tactical role of junior Royal Signals officers at battlegroup level, either as an RSO, an adviser or a specialist. The benefit to the Corps will be an extension of J6 influence, rigour and appreciation throughout the depth of the operational hierarchy. For the young officer, this proposal promises a balanced and rewarding engagement as a J6 specialist and as a leader fully engaged in all the exigencies of the battlespace. In the longer term, it will generate a cadre of Royal Signals officers with the experience to tackle the most demanding appointments in any staff branch, confident of their abilities to conceptualise the All-Arms battle in its entirety, which will sustain them for the majority of their careers.

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Journal Prizes

We are pleased to announce that the prizes for the best articles in the Winter 2010 edition of the RSI Journal have been awarded as follows. £100 each to:

“The Defence Information Infrastructure” by Lieutenant Colonel Richard Giles

“The Ashanti Expedition” by Lieutenant Colonel David Mullineaux

“EWB Gill -Taking Wireless to War” by Dr Brian Austin.

Our congratulations to them, with the hope that other Journal readers will be inspired to send us more such high quality articles.

THE ROYAL CORPS OF SIGNALS (NORTHERN) BAND

By Captain Tom Milford, Director of Music, Northern Band

Tom Milford began his musical career at the age of 8, joining the Salvation Army Band in his hometown of Sunderland. At the age of 16, he joined the Army, enlisting into the Light Infantry School of Music at Shrewsbury. After serving 13 years as principal cornet with the 3rd Battalion Light Infantry Band, he was recommended to attend the Student Bandmasters course at the Royal Military School of Music, Kneller Hall. He graduated in 1995 winning the Principal Director of Music's Prize for Conducting and the Prize for Church Service Composition. During his Bandmasters course he featured with the "Golden Eight" Fanfare Team participating at various prestigious events throughout the UK. He was also one of the first Bandmasters to graduate with a musical degree in collaboration with Kingston University. In July 1996 he was appointed Bandmaster of the Royal Lancers Band based in Bovington. Whilst at Bovington, Tom worked for many years with the British Youth Band Association (BYBA) giving instruction on all aspects of instrumental performance. In February 2000 he was appointed Bandmaster to Her Majesty's Coldstream Guards. On leaving the service in 2001 he worked as a Peripatetic Music Teacher with Rotherham Music Services and in the same year was appointed Musical Director of the West Yorkshire Fire and Rescue Service Band. Captain Milford was appointed Director of Music of the Royal Signals (Northern) Band in May 2004, and under his direction the band has strived to attain the highest possible musical standards in the true traditions of Military Music in the British Army. In April 2007 Tom took up the full time position of Director of Music for the RAF Honington Voluntary Band.



Most of the Corps has seen the band perform in some form or guise, be that as a full marching band at the RSA weekend or as a small quintet at a mess function. The band in recent years has moved from strength to strength supporting Corps, Regional Forces and Charity events all over the country. It is one of 19 Territorial Army Bands based in the United Kingdom. The bands history goes back to 1952 when the then Commanding Officer received a letter from the Durham Territorial Association stating that it was prepared to authorise an additional Band for TA units in the association area. Such an opportunity was not to be missed and the Band of the 50 (Northumbrian) Signal Regiment was formed as an authorised TA Band. It was initially a Brass Band as it was considered easier and more cost effective to recruit Brass players in a northern based band. The first Bandmaster was Mr W Holmes, a Mill Manager from Darlington who worked for Simpson Rolling Machines. This appointment did not last long and the Band was taken on by Mr A Woodall who had had previous military band experience with the Green Howards. Under his leadership the band won the coveted 'Silver Cup' at the annual Territorial Bands Association Competition. The Northern band retained this cup for several years. Mr Woodall later became the Mayor of Richmond and on ceremonial occasions was often seen changing from Mayoral robes into his Bandmasters uniform to carry out his full duties.

The band continued to flourish throughout the fifties and early sixties until a new band was formed on the 1st April 1967. 34th (Northern) Signal Regiment (Volunteers) was formed following the amalgamation of 49th and 50th Signal Regiments. The Northern Band moved from the disbanded 50 (Northumbrian) Signal Regiment and came under 34 (Northern) Signal Regiment. The band also increased in size and musical expertise as another two bands were amalgamated with it. The band was formed as an amalgamation of the Royal Signals, Royal Engineers (both Brass Bands) and 6 Durham Light Infantry military bands. This gave the band a great deal of diversity and increased the standard and expertise. During this period the band was led by a distinguished series of bandmasters, namely Stan Peacock, Maurice Pope and Derek Farrington. The band was initially based at Brambles Farm TA Centre in Middlesbrough until its move to more suitable practice facilities at Bradford Armoury, Darlington.

In April 1999, the band was disbanded as part of the Strategic Defence Review. Fortunately, due to the full support of the Corps and 34 Signal Regiment, the band was kept alive as an "unofficial" band and the musicians were re-trained as Driver Lineman and continued to serve in their dual role. In 2006 it was recognised that the band were an asset to the TA and on the 01 July 2008 it received its "official" status back and were able continue the fine traditions of the Royal Signals TA bands. Once again due to TA restructuring (Under Planning Round 2009) and the disbandment of 12 Signal Group and 34 (Northern) Signal Regiment the band faced an uncertain future. Thankfully the Corps stood by the band and it remained in Darlington under control of 32 Signal Regiment (V), co-located with 50 Signal Squadron; part of 2 Signal Brigade.

The Band is still based at the TA Centre Bradford Armoury, Neasham Road, Darlington and is in constant demand for musical support from the Corps, HQ PSC and the civilian community.

The Band currently has 27 male and female musicians and draws its members from ex-regular forces and civilians from all walks of life. There are a diverse bunch of part-time musicians which are school teachers, driving instructors, welders, printers and hospital technicians. The opportunities for travel are extensive, as in past years the band has completed summer camps in Gibraltar, Germany and Scotland and in 2008 the TA celebrated its centenary with a Pageant on Horse Guards Parade, London where the Royal Signals (Northern) Band took a leading role. During the same year the band was also privileged to play at Buckingham Palace for the Queen's Garden Party.

In 2010 the band was honoured to be selected for the Queens Birthday Parade in Cyprus (which counted as the Annual Camp). The band performed at a UN Medal parade in Nicosia, Charity concerts in Pissouri, Paphos and Curium and at Beating Retreats in Nicosia and Episkopi.



The Royal Signals (Northern) Band playing at The Armed Forces Day celebrations in Cyprus.

The band is able to provide a wide variety of musical groups for every occasion including a Marching Band, Concert Band, Mess/Dinner Band, Brass Quintet, Saxophone Quartet, Woodwind Group and Fanfare Trumpets. The band currently has vacancies for a number of instruments and welcomes new members that have a high standard of musicianship and that are committed to the challenge of a modern TA Band. Rates of pay are very competitive and rise in increments over the years; travel costs are also subsidised. Rehearsals take place every Tuesday evening between 7.30 and 9.30 pm and occasionally at weekends. The band has a very busy calendar, which fills up quickly. That said, the band will always try to support Corps and Charity events, although these commitments can generally only be filled at weekends for obvious reasons.

All enquiries regarding the band should be made to either the Band President Captain C Fogarty, Adjutant 32 Signal Regiment – 0141 2245024/32SR-RHQ-ADJT@mod.uk or Warrant Officer Class 2 DJ Crowther the Band Permanent Staff Instructor - 01325 356539/32sr-50-band-nrps@mod.uk

The Royal Signals (Northern) Band plays by kind permission of Lt Col PT Donegan, Commanding Officer 32 Signal Regiment (Volunteers).

THE WAY BETWEEN THE SEAS

By Colonel J Blashford-Snell OBE DSC(H) DENG(H) FRSGS MINSTRE

John Blashford-Snell served in Cyprus and Libya where he became an enthusiastic diver. As Adventure Training Officer at Sandhurst, he developed another side to his life, and founded the Scientific Exploration Society of which he is now President. With other Sappers he developed white water craft for the first navigation of the Blue Nile and later made the first vehicle crossing of the complete 200 mile Darien Gap between Panama and Colombia. He also developed giant inflatable boats for his survey of the Congo River. Later his teams constructed traditional reed boats to navigate from the Andes to the Atlantic. Commanding 48 Field Squadron he travelled widely, did a tour in Northern Ireland and saw active service in Oman. He later commanded the Junior Leaders Regiment RE and the Fort George Volunteers (a government project for urban young). From 1978-91, under the patronage of HRH The Prince of Wales, he organized Operation Drake and Operation Raleigh, to develop leadership in the young of many nations. Over 10,000 took part in these worldwide programmes. Retiring in 1991, he continues to lead challenging expeditions, provide drinking water for remote communities and working with the under privileged young. In 2010 he continued his quest for the giant elephants in Nepal and is now engaged on expeditions in Guyana and Mongolia



GLANCING down through broken cloud from the Army Air Corps Beaver during the expedition to cross the infamous Darien Gap in 1972 I had my first glimpse of the Panama Canal. From then on the problems of making the water link between the Atlantic and the Pacific fascinated me, but it was some years before I learned that a trans-isthmian canal had almost been made elsewhere. Indeed were it not for prevalent earthquakes and volcanoes it would probably have been built in Nicaragua rather than Panama.

Some four hundred miles North West of the present canal lies Lake Nicaragua, an enormous lake forty five miles wide and over a hundred long. This is one of the largest freshwater lakes in the Americas and when the wind is blowing it can rise or fall several feet along its shores. Together with its smaller neighbour Lake Managua, this great body of water

is drained Eastward into the Caribbean and the Atlantic by the San Juan river which flows for almost one hundred and twenty miles through jungle covered banks along the border with Costa Rica. However Lake Nicaragua is actually much closer to the Pacific; at one point only twelve miles to the West. As a result, Nicaragua suffered centuries of conflict with colonial powers, mercenaries and pirates struggling to dominate this potentially profitable path between the oceans.



The Spanish had colonised the land in 1523 and used the Rio San Juan as a trade route. Unfortunately for the people of the prosperous city of Granada on the Western shore of the lake, the pirate Henry



Above: dry season

Below: wet season



Morgan found he could navigate the river and its rapids in large canoes. Thus in 1665 he crossed the lake to sack their city and carried his loot back to Jamaica. In the 17th century the Spanish built an impressive fortress to guard the river. However in 1780 El Castillo was captured by a British expedition that included the young Captain Horatio Nelson, but driven out by malaria, the invaders eventually abandoned the unhealthy site.

In the eighteenth century and possibly before, engineers realized that this vast lake, only cut off from the Pacific by a narrow strip of land and joined to the Atlantic by a river, navigable over much of its length, offered a possible inter ocean route. Serious plans were soon being made to build a canal across Nicaragua. Numerous engineer studies were made and most favoured Nicaragua as the best route. Meanwhile Ferdinand de Lesseps, famous for his success at Suez, had started work in Panama. Experienced engineers advised this determined man against his plan for a sea level canal but regardless he pressed on with obsessive vigour. However yellow fever and malaria killed many thousand workers, there were insurmountable construction problems and financial mismanagement finally forced his French company into bankruptcy in 1889.

The Nicaraguan alternative had influential support in the United States but De Lesseps and his colleagues were eager to dispose of their land holdings in Panama and lobbied the US Congress to take on the unfinished job. Then in 1902 Mont Pelee erupted in Martinique. The death of 30,000 shook the Americans and an enterprising member of the French marketing team sent every member of Congress a Nicaraguan stamp bearing the picture of an erupting volcano. Reminded of the danger of a geological catastrophe Congress voted for the canal in Panama and bought out the failed company. Nevertheless the Nicaraguans still pray that one day they will have a waterway to shorten the seaway between the East and West coast of America and able to carry huge vessels that cannot navigate the Panama Canal today.

But was there a way through long before? The famous globe and wall chart made by the foremost Germany cosmographer, Waldseemueller in 1507 shows a gap between North and South America. The Pacific coast of America is strikingly drawn on his chart which was published before the Spanish explorer, Nuñez de Balboa discovered the Pacific in 1513. Clearly a navigator had been there. Maps and globes by astronomer and geographer Johannes Schoener published in 1515 and 1520 and maps by 18th Century British hydrographers erroneously show a channel that would enable boats to pass between the oceans. Furthermore, Chinese DNA and artefacts have been found in Central America, and local history tells of a Chinese presence and European explorers have recorded Chinese wrecks. Author Gavin Menzies, the retired Royal Navy submarine commander, whose best sellers “1421” and “1434” tell of 15th century Chinese global exploration, believes there was a much earlier link between the Atlantic and the Pacific.

Thus with Gavin’s support and the backing of the Scientific Exploration Society, I set up a recce expedition to look into the possibilities. Our five strong team of explorers and archaeologists were given considerable help by Nicaraguans keen to solve the mystery. So equipped with GPS, altimeters and magnetic anomaly surveying rods (another word for dowsing), we set off in January 2010. Moving by vehicle and on foot through the hills and jungle filled riverbeds, we checked the possible routes for a link. Several areas were found where rivers flowing East to Lake Nicaragua and West





to the Pacific rose within a few hundred yards of each other. One headwater site between two rivers which we dowsed, indicated possible walls of an infilled canal.

At another site in the almost dry river bed of the upper reaches of the Rio Ochomogo a strange artefact (60 x 90 cms) carved from volcanic rock was discovered and this has yet to be identified. Pausing at the lake side we learned that Caribbean bull sharks come up the Rio San Juan, jumping like salmon up the rapids and adapt to the freshwater. Attacks on swimmers have been reported but this does not seem to have affected the local tourist trade. Our altimeters showed the Lake is 32 metres above sea level and the lowest point between the Lake and the Pacific some 44-47 metres above sea level. Thus a canal would have needed locks, but we know the Chinese were brilliant engineers.

We had freedom to move around the country but the Civil War of 1972-79 is still fresh in local memory. Well armed security guards at several haciendas turned us away, and in one village a demented old woman waving a long machete, accompanied by a group of angry people came for us, striking our vehicle. Apparently she thought we were Americans seeking to seize her land. Fortunately we had a Union Jack with which to calm the old girl down. Apart from a few dents to our Toyota there were no casualties. However, the great break through came when we met 35-year-old Mariano Hernandez, who between 2005-09, had made three journeys by water from the centre of the isthmus to Lake Nicaragua

for fishing.

He and his brother used a ten foot homemade canoe in which they had at least one capsized. On reaching the lake, they were badly frightened by a six foot bull shark but returned home with their catch. Later Mariano canoed westward for much of the way to the Pacific. He and other villagers pointed out that this was possible during the May-October wet season when a large area of flat land is inundated, becoming a shallow lake joining up the rivers and streams. There was clear evidence of the flooding. We also learned that a local farmer had once shipped his cattle by bamboo raft down the Rio Brito into the Pacific then along the coast to sell them for a good price in an ocean port.



There were numerous artefacts that had an oriental appearance in the Granada Museum, and on our return Cedric Bell, an engineer surveyor, who has become an authority on ancient canals, found indications

in our photographs of what may prove to be early locks



and canalisation. Much more exploration must be done to confirm this. However I believe the cartographers of the 15th to 17th centuries, who showed a channel at around 12°N, were acting on information from the indigenous people who told them of a way through in the wet season and thus they put it on their maps. But who was there in the 15th century to talk to the Indians? If Gavin Menzies is right, it could have been the Chinese. Perhaps it was not surprising that on my last day in Granada I was invited to address a party of Chinese entrepreneurs!

BEYOND THE WIRE

This is an account by three Royal Signals personnel deployed with the MSSG in a front line role with 16 Air Assault Brigade on Op HERRICK 13.

The Military Stabilisation Support Group (MSSG) is a new joint unit which provides the link between military action and the civilian led stabilisation effort in Helmand Province. Small teams (MSSTs) of between 6 and 10 personnel are attached to each of the Battle Groups in TFH, as part of the District Stabilisation Teams. As the eyes and ears of the civilian led PRT, MSSTs go with the front line troops on the ground to provide focus for stabilisation and development in the wake of military kinetic action. In reality what this means is paying immediate compensation for damage, taking over compounds and land, identifying development vacuums, performing Key Leader Engagement and tendering and managing contracts for construction of roads, bridges and buildings. In short MSSTs assist the DST in providing a link between the Afghan people and their government (GIRoA). Op HERRICK 13 saw 3 Corps members deploy with front line infantry battle groups into Afghanistan. Very different to anything they had ever done before with the Corps, here each of them gives an account of their time spent 'on the ground'.



Maj Bee Bryan – OC MSST NES(N) Battle Group

The first time I left the gates of the FOB on a Danish APC as top cover, pouches stuffed with grenades, morphine and tourniquets
What was I doing? I am a 36 year old
you could say I was a little
deployed with B Coy across
of intensive infantry based
forefront of my mind, every
sign for an IED, every innocent
roar past was a potential dicker
cycle was a gunshot in my over
Danish Battle Group in Narh-
that spans the Green Zone and
Gereshk, the second biggest city
in a few weeks, as I got to know the
and people that I would be dealing
out on patrol became second nature.
spent half my time as a staff officer
BG HQ, and half out and about with
Advisors or infantry call signs.

As one of only 3 females deployed
large part of my job was as a Female
of women in Afghanistan are confined
denied health care and education and
public, yet have a huge influence over
and can therefore shape their futures. The
source of influence. They will not come
and reach them. Slowly over 6 months



loaded and made ready, osprey
my heart was in my mouth.
female major from a Corps, and
outside my comfort zone as I
the desert. With the months
PDT we had completed at the
pile of rocks looked like ground
Afghan watching the convoy
and every back firing motor
active brain. I was with the
e-Saraj (North), the district
Helmand River and contains
Helmand. Thankfully after
surroundings, key leaders
with on a daily basis, going
As the OC of the MSST, I
in the influence cell in the
the FCO Stabilisation

with the MSSG, a
Engager. The majority
to their compounds,
are rarely seen in
their teenage sons
women are an untapped
to ISAF, so it was my job to go out
we could implement female health initiatives, adult

literacy classes and employment training for widows empowering the female Community Council members and the Women's Centres. This was all against the backdrop of intimidation and threats from the Taliban. A big success was the International Women's Day celebration in Gereshk, which was attended by over 350 women, and saw a public performance from the winner of Afghanistan's first X-factor!



I worked a lot with the District Governor, Chief of Police and Mayor. On several occasions during outreach shuras the District Governor would ask me as the only female present to stand up so he could point at me and say to the local men "Look, we even have foreign women fighting for you. You should be ashamed and fight for yourselves".

I also spent a month with 3 PARA in Nad-e-Ali District where kinetic operations were the main effort, meaning the MSST was heavily involved in the monetary reparation of damage, from mastiff shaped

holes in compound walls to collapsed culverts and crops set alight by tracer. All of this had to be followed immediately by consent winning activity in the form of District Governor outreach shuras, improved ANP check points and community projects such as wells, foot bridges and health outreach to prove there was a better alternative to the Taliban.

No two days in this job have been the same – I could be helping the local vet vaccinate goats at the Government Farm, negotiating costs and security arrangements with local contractors, organizing a shura in a recently cleared village or standing round the bird table discussing the stabilisation effect of kinetic operations. The role has been fascinating, exciting, frustrating and rewarding, but it has been an absolute experience from start to finish and the last 6 months has well and truly flown by.

WO2 Scott Tomblin – 2IC MSST NES(S)

I had deployed to Afghanistan twice previously leading Teams of Installation Technicians from 10 Sig Regt but had found myself firmly behind the wire. I volunteered for this job to get some front line experience and I have not been disappointed. My team consisted of 10 men, dispersed at the individual company locations of 2 PARA. I was based in Patrol Base 2, Nahr-e-Saraj (South).

My responsibilities have varied from normal 2IC roles such as J1 and J4 issues, providing life support for the deployed elements of the team to accounting for over US\$160,000 used to fund development projects and assistance payments in NES(S). I have assisted with consequence management after locals have been injured or killed during kinetic engagements, and once in the location we wish to 'influence' or 'stabilise', the MSST really comes into its own; facilitating District



Governor shuras to encourage interaction with GIROA and compensating farmers who have had their land damaged by manoeuvre operations.

During my 6 months in NES(S) I have deployed on several operations as part of the 'Influence Multiple' to provide mitigation where serious damage is expected to be caused, often by the Warthog AFVs. I have led an infantry multiple, moving between rural populations, forming part of the multiple's integral force protection and low level intelligence gathering assets. On one occasion I found myself valoning (metal detecting) and confirming IEDs whilst clearing a HLS and shura area; not something I was expecting to be doing as an Inst Tech WO2, but an experience that I will never forget. Every member of the NES(S) MSST has found themselves in contact, and I have dodged RPGs on more than one occasion.

Working with the Afghan National Security Forces is a daily occurrence and is generally a positive experience. It provides many challenges but their understanding of local national motivators is second to none. We live alongside them, in patrol bases or in temporary checkpoints and they are always hospitable, willing to share the little they have during meal times. My time as an MSST 2IC has been very positive. The experiences I have gained over the last 6 months on the frontline in Helmand will benefit me for the rest of my career and beyond. I have developed my communication, negotiation, problem solving, project management and infantry skills. It has tried my patience but has proved more rewarding than I could have ever imagined. Would I do it again? Every time!

Sgt Des Simpson – MSST Operator NES(N)

As an IS engineer the opportunity to deploy for six months without having to be on a shift pattern or looking at a computer really appealed. During the MSST build up training at Ludgershall in Hampshire we were taught all the skills required to deploy as a MSST member to any of the districts in Helmand. We covered stabilisation skills such as shuras, compensation clinics, interacting with local nationals, using interpreters as well as all the background on the area. Additional to this we had a very comprehensive infantry skills and field firing package in which I probably fired more rounds of ammunition in three months than I had in my previous 18 years in the Corps.

Once deployed my role was as one of the two stabilisation operators in NES(N). My first task was with an RDG Sqn on route 611, the new road being built to link Sangin onto the main highway. Work had stopped on the road four weeks earlier after a large firefight between the militia guarding the workforce and the insurgents resulting in over 50 militia being killed.

I also deployed with the Danish B Coy and the Afghan SF on various early morning patrols into Deh Adam Khan, an area of Green Zone that previously had no ISAF presence. This was a new experience for me and after wading through my tenth waist deep irrigation ditch, it soon became apparent that I'd have to rethink the packing of my equipment. Leg holsters may look good but aren't very waterproof! It's quite true what the PTIs say when you are leopard crawling – you can get lower and faster – I had to on several occasions with rounds zipping over my head – which was an incentive.

I deployed on two Afghan led partnered operations. Op OMID PANJ was a wholly Afghan planned and Afghan led operation to move into the Green Zone, take over a compound and build another Patrol Base. During this operation I was responsible for taking over the compounds that would be built into the new base and compensating the occupiers and farmers in the area. This took over my life for 7-8 weeks as we had caused a considerable amount of damage and I had to assess the compensation claims. I spent two months living in fields, compounds, patrol bases and chasing claims at MOB PRICE. I got to know most of the farmers and landowners in the area by name and I also knew how much land they owned and where exactly their land was located. In the end we compensated all that were entitled and I think that went a long way to making the operation the success it was.

Finally, I went back up to route 611, but this time my Military interpreter and I deployed for five days with the US Marine Corps. We went to look at some quick impact projects they had identified in the area and to assess whether we could help facilitate their needs. We identified two projects to help some villagers repair an irrigation pipe and to build a wall round a 30m deep open well as children from the village had previously fallen in and drowned. We got on to our local contact in Gereshk and bought the supplies that would allow the locals to help themselves.

I am now looking forward to a few weeks leave, then getting my signals hat back on and getting stuck in to my new job at 22 Signal Regiment in Gloucester.

TWO MONTHS IN SUMMER

By Brigadier WPW Robertson CBE

This article describes the impact on the British Forces organisation in Cyprus following the Turkish landings in the North in 1974, when the author was Commander Dhekelia Area. Many readers will have personal recollections of that turbulent time.

“No matter how well a Command and Control structure is designed, for it to function efficiently, it must have first class communications”. No reader of this article would quarrel with that statement. All too often however, it is the failure of human communications, as opposed to those electronic communications for which we as a Corps are responsible, that contributes to inefficiency, confusion and sometimes disaster. During the months of July and August 1974, as Commander Dhekelia Area, my electronic communications never failed me, but I feel that some of the human communications problems that might have occurred during these two long, hot, summer months may be worth recording for those who aspire to command.

When I first assumed command in February 1971, I knew sufficient about the past history of Cyprus and was soon updated enough of its then current political situation to appreciate that what might, on first sight, be an idyllic island, could well revert back into, at best, a less comfortable spot, and at worst, a disaster area. After a period of studying contingency plans and getting a feel of the command, the island, and its people, it became relatively easy to identify personalities and organisations with whom the best possible human communications would be vital if the situation on the island were to deteriorate.

First, there was the British High Commissioner and his staff, including of course, his Defence Advisor. It was he would be ultimately responsible to Whitehall for decisions affecting the lives of British nationals, both residents and tourists, and those of “friendly nationals”. Although normal channels of communication were likely to be through Headquarters British forces Near East (HQBFNE), Dhekelia was so placed close to Nicosia and Famagusta that it was I who would have to look after those potential refugees, and communications might have to be sidetracked. Mutual understanding of each other would be vital. Experience elsewhere had already taught me that political considerations and military experience do not always go hand in hand. I was very lucky that, in the High Commissioner, I found a man with mutual interests in India and the Indian soldier, who was very ready to open the door of friendship and who was very willing to meet me on my own ground.

Secondly, there was the United Nations Force – multinational, consisting of British, Canadian, Danish, Swedish, Finnish and Austrian contingents commanded by Major General Prem Chand of India. Here again, I was fortunate

in that the General had once served with the Gurkhas and we shared a common language – Gurkhali! One of my functions was to provide logistic support for this force. Through the General and his headquarters staff I was able to make personal contact with all contingent commanders, and in particular those commanders of the Austrian and Swedish contingents whose areas of responsibility bordered on the boundaries of the Eastern sovereign Base area (ESBA).

Thirdly, there were the Cypriot District Officers and Chiefs of Police of Famagusta and Larnaca districts, whose territories again bordered on mine. As a major point of contact with them I had my own ESBA Area Officer, George Savvides, who was a distinguished servant of the Crown, both as a wartime member of the Cypriot Regiment, and as a colonial civil servant. Official contact with the Cypriot authorities was maintained by a three monthly liaison committee meeting, which was always very short, followed by a social lunch with our wives, which was always very protracted! We did however know and trust each other very well, although we did not necessarily share each other’s political views. The next two areas where good communications were vital were, or should have been, more commonly known, but were not necessarily developed as well as they might have been.

First, there was my own relationship with my staff. It was small, and consisted on the G side of only one G2, one G3 and a range officer, and on the AQ side of a DAA&QMG, a Staff Captain Q WRAC and a Staff Captain A, a retired officer, with a Station Staff Officer (SSO) in support. This obviously too small to operate on a 24-hour basis, and it was necessary to find and train G and AQ watchkeepers in support. They were found from a variety of sources – two officers from the Command Pay Office, the Permanent President of Courts Martial, the 2i/c of the Veterinary Centre, and supernumerary subalterns in the Ordnance Depot. Each and every one had to be trained as a watchkeeper and taught to think as I would think, so that, in my absence, they could take decisions which they knew instinctively would be in accordance with my views.

Second, there was the need to ensure that the many logistic units who formed the vital backbone of Dhekelia Area communicated with each other, over mutual problems, readily and easily, without always going through staff channels to do so. Finally, and after several months, another category of people who tended to be neglected became apparent. These were the many MOD employees, Department of the Environment employees, school teachers, lands agents, claims officers, welfare workers and Forces Broadcasting personnel, who lived in our midst and who shared our leisure facilities, but with whom there was no official central point of contact. I started an informal quarterly meeting attended by the head of each department, at which I outlined the current political situation on

the island, gave my ideas on how we might improve our living conditions and sought their views and complaints. It was brief and informal, but was to pay off in the months that still lay ahead. Throughout the summers of 1972 and 1973 Cyprus lived up to its reputation of an idyllic island, despite the undercurrents of political unrest. We were able to enjoy its pleasures and with many friends who came out to stay with us.

On Monday 15 July 1974 however, all was suddenly changed with the “coup” that toppled Archbishop Makarios and invoked Turkish military intervention. Throughout that first week we remained in our bases. Inter-communal fighting in Larnaca and Famagusta interrupted the lives of those service families living there, but actual danger to British lives was minimal. It did however, look as if I had backed one loser, as the Police Chief of Larnaca District was trapped in his Police Station and finally capitulated to National Guard forces after four days of noisy, but remarkably undamaging fighting. His opposite number in Famagusta had however sided with the National Guard. He was within six months of getting his pension!

Saturday was E (Evacuation) day. By last light on the previous night it became clear that the Turkish invasion force would land and that all that was needed was the executive order to evacuate service families. This was given at 0430 hours, and by mid-day Larnaca families were all safely in the Base. Famagusta was a different story. Heavy fighting was taking place around the Turkish Old City and movement was difficult. By 1800 hours that evening 800 out of the total of 1500 service families had been moved to safety, but it was necessary to tell the remainder to stay safely in their homes until first light the following day.

Meanwhile, in Nicosia, the high commissioner was coming under increasing pressure to start the evacuation of British nationals, as looming large in his mind were the many thousands of “friendly nationals” in Kyrenia and Famagusta who were looking to him for instructions. Neither he nor I knew exactly how many there would be. I was quite clear in my own mind, and made plain to him, that my first priority was the lives of service families. This was accepted, and in return he immediately appointed a liaison officer to Famagusta to try and ascertain the numbers and whereabouts of our potential evacuees.

Two operations were launched on the morning of Sunday 21 July. The first was to complete the evacuation of service families from Famagusta, followed by the evacuation of British and friendly nationals. The second was the convoy to evacuate Nicosia. This left Dhekelia as a convoy of 50 four tin trucks escorted by B Squadron 16/5 Lancers. It escorted a total of 1,000 civilian cars and 4,500 evacuees. By last light, Dhekelia contained 1,900 service wives and children, billeted with families in the Garrison, some 6,000 other refugees living in the open and another 1,500 temporarily housed at Ayios Nikolias, but safe. In the next five and a half days, a total of 7,500 people of 46 different

nationalities were flown from Kingsfield Airstrip. Another 50 Russian (“friendly nationals”!) and 117 US citizens were evacuated by helicopter and sea. Over 700 Scandinavian tourists were lifted onto the base by our Swedish friends in the UN force, who also looked after many other nationalities. Our UN contacts had paid off.

During these five and a half days every single person in Dhekelia played his or her part. The MOD Civilians worked alongside wives and their teenage children manning documentation centres, feeding refugees, distributing rations to quarters, cleaning lavatories and doing the hundred and one tasks normally undertaken by our locally engaged personnel (LEP), who had disappeared. All this took place in daytime temperatures of 110! Communications were excellent. During this time also, the military strength of the area doubled to 3,200. This included major units such as 42 RM commando and A Squadron of 16/5 Lancers to replace B Squadron, who had gone to UN command. On top of this, there were individual reinforcements to replace LEP and an additional Royal Corps of Transport squadron to assist in movement. All this had to be coped with by that small and somewhat ad hoc staff. There were no communication problems here either.

Phase III saw the brief return of service families to Larnaca and Famagusta, followed all too soon afterwards by resumption of the Turkish advance on Famagusta. With the very real threat of heavy air attacks on that town, this time we set ourselves a bogey time of evacuation in four hours, and thanks to the splendid organisation by 9 Signal Regiment, we made it. We were somewhat hampered by the knowledge that our first move would be watched for by the Cypriots who would follow close on our heels. Again we enjoyed much cooperation from the Chief of Police who was still at his post, although now almost asleep on his feet. Hard on the heels of our 1,500 families came the rush of the remaining 40,000 inhabitants of Famagusta, followed by several thousands more from the villages to the north. They came by car, by bus, by tractor, by bicycle and on foot. They came with their sheep and goats. They kept on coming. And they were going to stay in the only safe place – the ESBA. On top of all this there was the problem that our main NAAFI warehouse containing 2,000 tons of vital goods, 600 married quarters and our sole remaining stock of potatoes were now under Turkish control. We fed 10,000 refugees daily in our own camp at Athna forest and through our district officer contacts distributed rations to refugee centres for the remainder. We removed all these stores, families’ private possessions and potatoes through a new communication contact – the local Turkish commander.

All this was achieved again by my staff officers and units under command, and by the help of every person on the base. There were times when felt that it might be nice if the command net would fail for a couple of hours, but it never did. I never had any doubts about human communications: they were through 24 hours a day, for two long,

THE REVEREND JOHN GAMBLE, THE FIRST CHIEF SIGNALS OFFICER

By Rev RD Burley



Roy Burley is the CofE chaplain at Blandford Camp, and has contributed this account of one of the early pioneers of signalling.

The 27th July 2011 is a significant date in the calendar of both the Royal Army Chaplains' Department and the Royal Corps of Signals, as it marks the 200th Anniversary of the death of the first Chaplain General and the first Chief Signals Officer, who was the Reverend John Gamble.

John Gamble was born in 1762 in Bungay, Suffolk and was the son and heir of Dixon Gamble, a prosperous wool dealer and draper. Gamble went to Pembroke College, Cambridge in 1780, and graduated with a BA in 1784 and an MA in 1787. It was whilst he was at Cambridge that he shone at Mathematics, and showed a scientific and inventive faculty. John Gamble married "Miss Latham, of Madras" in 1805, and retired in 1809 tendering his resignation on grounds of his health in a letter to the Prime Minister, Palmerston on 23 Dec 1809. This was acknowledged on 19 January 1810, bringing to an end his thirteen years as Chaplain General and Chief Signals Officer on a pension of £440 per annum (£24,900 today), which he did not enjoy for long as he died at Knightsbridge, London, on 27 July 1811. Only after his death that was it discovered that one issue had not yet been determined; this was the matter of the level of a widow's pension for the Chaplain General. It was suggested and approved, that the rate should be fixed at £180 'being the rate fixed for the widow of a Colonel.' The only known painting of John Gamble is at the Armed Forces Chaplaincy Centre, at Ampport, and that of him in his youth.

In 1795, John Gamble wrote a pamphlet with the catchy title of *Observations on Telegraphic Experiments, or the Different Modes which have been, or may be, adopted for the Purpose of Distant Communication*. His lengthier essay written two years later was dedicated to His Royal Highness, the Duke of York. The word telegraph literally means "far-writer", a phrase coined by Claude Chappe.

In addition to his chaplaincy duties, John Gamble was paid £600 (2009 rate £46,600) a year to assist him in estab-

lishing telegraphy, this Royal Warrant was issued on 10 November 1796, 'and thus became the first Chief Signal Officer in the Army'. If this were not enough, in 1799 he is listed in *The Gentleman's Magazine*, 'as Rector of Alphamston near Sudbury in Essex.' John Gamble's time in this small parish church did not go down well with everyone, as there is an interesting record showing that after about a year he, 'must have sanctioned an extraordinary act of vandalism, as the mediaeval stained glass was systematically removed from the church, bundled up and sold on Sudbury market 'for what it would fetch'. The record does not show why this happened or the outcome of the sale.

A definitive explanation of this role can be found in Howard Mallinson's *Send it by Semaphore*. John Gamble did not start with a blank sheet of paper, but he was certain that 'a machine could be built which could fulfil the purpose better than the French [Claude Chappe] one.' In fact, it was a drawing found on a captured French soldier, whilst on operations in Flanders, that gave Gamble a starting point. The Reverend John Gamble invented a five-shutter machine allowing thirty-two different signals; however, 'the Admiralty had decided to use [the system designed by] the Reverend Lord George Murray instead', much to John Gamble's annoyance. The reason given for adopting Murray's system was 'that this system allowed for the transmission of decimal numbers and a few operating signals as well as 24 letters of the alphabet.' Murray and Gamble's designs were but two of the one hundred submitted to the British Admiralty and the British Parliament.

In John Gamble's follow-up paper, reviewed in the *Critical Review* magazine in November 1797, he wrote that 'an eminent and learned professor of Germany, Mr. Bergstraesser, of Hanau,' had carried out a number of experiments into a system of communication that 'was capable of transmitting intelligence a hundred miles in a few minutes', this system being based on fire and smoke. Gamble does hint at a passage from Vegetius which was adopted by the French. His annoyance comes through in a telling sentence in the middle of his paper where he reports;

In the midst, however, of the author's attempts, he was stopped by an intimation from the Lords of the Admiralty, that they had adopted a telegraph, said to have been invented by Lord George Murray; and a hint is given that a speedier communication of this discovery from the admiralty might have been the means of saving a great deal of trouble and expense.

The Admiralty may have rejected his five-shutter system, but Gamble was not one to give up easily. By 1797 John Gamble was able to see his rivals telegraph system in operation from outside his office window on Horse Guards in London and he decided that this system could be improved upon, which Gamble goes on to elaborate on in an article

reviewed in the Critical Review. John Gamble brought his idea of a Radiated Telegraph to the Duke of York, who wrote on 12 January 1798, to the Secretary-at-War, recommending ‘that an immediate experiment be made on two portable (radiated) ones presented by the Rev Gamble.’ Although some of these portable devices were taken out to Portugal, the system would again fall into disuse after the Peace of Amiens in 1802. Gamble’s Telegraph was, however, ‘adopted for field use in a mobile form, each station being mounted on a “cart on old coach wheels with iron axles” (a model of Gamble’s Radiated Telegraph can be found in the Corps Museum). This useful device could enable communications of ‘up to five miles’, which made it quicker than horse travel over long distances.’ Wellington relied on this system to such an extent that he established ‘stations between his headquarters, near Lisbon, and Bada-joz 130 miles distant.’

In 1803 Gamble was invited to ‘the establishing of signal posts and telegraphic communication’, this individual was such, ‘that it must be arranged by one intelligent person and was accordingly directed Mr Gamble to receive your directions for establishing what you may judge necessary throughout your district.’ Wellington in 1814 established a permanent signal organisation which consisted of ‘an officer, a non-commissioned officer and three men, the men receiving extra pay.’

Colonel John Macdonald writing in the Gentleman’s Magazine, certainly believed that his telegraph system which allowed 4,095 combinations, outshone that of Chappe’s telegraph which only gave 196 changes. What is of more interest is that nowhere in the article does he acknowledge the work of John Gamble, nor for that matter Lord George Murray. One the other hand, Mallinson does not refer to Macdonald’s work in his comprehensive study, perhaps poetic justice?

Whilst the Reverend John Gamble may not be known by many within the signals world, his work brought a step-change in the way that commanders were able to communicate in the field. It was because of Gamble’s work and the importance that Wellington clearly saw in effective communicating over great distance that a separate Corps of Signallers was created by Wellington in 1814. Therefore, Gamble’s important work should be celebrated, not just by chaplains, but by all signallers.

MR PEPIN OF MARLBOROUGH: THE DESIGNER OF THE ARMY’S FIRST VHF WIRELESS SET?

By Dr B Austin



Brian Austin is now an Honorary Senior Fellow of the University of Liverpool’s Department of Electrical Engineering and Electronics following his retirement as an academic in 2005. His research interests have covered the broad field of radio communications, including the development of a medium frequency SSB manpack for use underground in the South African gold mines. Many years service in the South African Corps of Signals fuelled his interest in the history of military communications and he has published widely on the subject. The battle of Arnhem remains of compelling interest.

Introduction

Arthur Raymond Pepin was a master at Marlborough College in Wiltshire from 1915 until 1952. During that period he played a particularly significant part in the Combined Cadet Force (CCF) at the College where he served as a signals officer during both world wars and then, in 1948, became its commanding officer. Pepin was also an enthusiastic radio amateur who had followed closely the developments in wireless communications as they evolved from the days of spark to the superhet receiver and to valves with suppressor grids. In 1934 he set up a wireless society at Marlborough and filled a large hut with tools and test equipment for the construction of wireless apparatus. At Pepin’s request, and on the strength of his very active involvement in amateur radio, the GPO granted the College a transmitting licence with the call sign G5MC. It also issued the call sign G2MS for use when those wireless sets were on the move, as they surely would be when the CCF was on manoeuvres.

A VHF ‘walkie talkie’

Given such facilities, and Mr Pepin’s skills and enthusiasm, it is not surprising that the wireless society soon produced many highly competent designers and constructors of wireless apparatus and the CCF signals section was the immediate beneficiary. In 1936 the Marlborough College Wireless Society produced what is arguably the first VHF ‘walkie-talkie’ set to be used by soldiers – albeit jusschool

SEE and its WS No 13

The Army did have a VHF set in the late 1930s but it was only experimental. Designed by the Signals Experimental Establishment (SEE) at Woolwich and known as the Wireless Set (WS) No.13, it operated from 51 to 64 MHz with an output power of 300 milliwatts giving a reported range of about a mile. The 13 set was a cumbersome contraption requiring a soldier of some physical stature and sureness of foot to carry it over any useful distance. It was revolutionary in almost every way with its most noticeable feature being the loop antenna that protruded from behind the operator's shoulders on an arm that made the whole structure look like a railway signal. The loop itself was a metal tube while the valves and other electronic components making up the transmitter and receiver were accommodated inside the box across the loop. Two Bowden cables ran around the man's waist belt for the purpose, apparently, of tuning and operating the set. Within the small of the man's back was the battery, which was not small, while positioned just below his chin was a microphone. A headset clamped to his ears completed the installation. This device and the man who operated it must surely have impressed their Colonel-in-Chief, Princess Mary the Princess Royal, when she visited the Royal Corps of Signals at Aldershot in 1937.



1940

The CCF demonstrate their prowess.

boys – in Britain. This portable wireless transmitter and receiver operated on a wavelength of about 5m or a frequency of around 60MHz. This significant shift up in the spectrum represented a major break with radio tradition and practice within the British Army whose equipment almost all functioned at the lower end of the HF band, below 10MHz. It is significant that such a bold move, which was contrary to all the accepted (British) wisdom at the time, was made by a schoolmaster who probably followed his own intuition and experiments rather than the doctrine then sacrosanct within the Army – and sanctioned by scientists – that VHF was not much good ‘beyond line of sight’.

The results obtained with the walkie-talkies were noteworthy. According to the booklet commemorating the centenary of the CCF in 1952, Marlborough College and their neighbours at Winchester maintained excellent wireless communications between Battalion HQ and Companies throughout the Field Day in 1936. Likewise, at the annual CCF camp that year, a wireless tent was provided for the first time. Further technical development and refinements followed and by 1937 the next generation of VHF sets went into service and earned high praise during the annual inspection by senior officers from the Army. It was probably on this occasion that a visiting brigadier was astounded by what he saw (and no doubt heard) for he wrote soon after in some dudgeon to the War Office demanding to know why the Infantry was not equipped with such sets. Marlborough's CCF had by now gained something of a reputation for the calibre of its wireless communications and, unsurprisingly, during a combined exercise with a TA Brigade the following year, there were 14 of these ‘privately owned sets’ in action providing speedy communications across the exercise area. Later, at another camp, the regular Battalion Commander commandeered the CCF section and its radios and used them for every purpose he could think of, including Church Parade on Sunday.

Portable Army Radio Tested



The Princess Royal expresses interest in a new portable field radio transmitting and receiving set that was demonstrated by the Royal Corps of Signals at Aldershot, England.

A PORTABLE field radio transmitting and receiving set that operates while strapped to a soldier's back was satisfactorily tested by the Royal Corps of Signals at Aldershot, England. The device features a special loop-type antenna, standard earphones and a hand microphone. The power supply unit is self-contained.

In use, however, the ‘13’ was troublesome. If the soldier loosened his belt the set went off tune; the nearby presence of his tin hat had the same effect, as did his heavy breathing after climbing a hill. The SEE creation was not a success and it soon went into oblivion and with it, apparently, did the use of VHF by the Army in the war to come.

Marlborough one, War Office nil

Not surprisingly by this time, word had reached the War Office from various quarters that the CCF at Marlborough College was making rather good use of its homemade VHF wireless sets when, by contrast, the Army's own were somewhat less successful, as we have seen. In fact, the school's achievements had begun to fill a quite comendous WO file whose contents caused the occasional colonel to sigh and then to say "Oh my God, the boys of Marlborough school again". But for all that, no directive was forthcoming in the form of a General Staff specification calling for a wireless set for use within an Infantry Battalion and so neither SEE nor anyone else (except Mr Pepin) did anything about developing one. However, around 1937/8 an urgent call came from the Tank Corps for a short-range tank-to-tank set and so SEE 'knocked up a few models' for them to try'. It then occurred to someone that they might also have a role in the Infantry and some were then sent to a battalion exercising near Plymouth to 'find out whether they would find wireless telephony a useful thing to have'. The result was rather disappointing, not for reasons of poor performance as such, but rather that they (the PBI presumably) 'didn't employ an ounce of sense on their trials and returned an adverse report'.

In 1938 the SEE recruited a man who claimed to have worked – at his own expense – on light-weight, short-range wireless sets. No record of his name seems to exist since what transpired turned out to be something of a fiasco and in everyone's interests, including his own, he was summarily forgotten about. In the only extant record known to the author this individual, referred to simply as 'X', was given the job of trying to make some kind of light-weight wireless equipment for experimental purposes. This was in line with the SEE brief of carrying out experiments to test new ideas. A wireless set on a man's back was clearly one of those. As it turned out the gentleman in question was of somewhat peripatetic working habits: his behaviour as an employee was reportedly 'impossible'. Such vagaries are tolerated when genius is at work but in this instance the evidence for that was shaky. The ultimate model of a portable wireless set that emerged following his efforts was described as being ludicrous and well worthy of Heath Robinson. None of the techniques it embodied was original but one was certainly novel. The set itself was carried in a pack on the man's back while the antenna was a rectangular loop or frame aerial projecting above it. At its apex was a decidedly novel feature: the transmitting valve exposed to the elements and every other hazard! Needless to say this idea didn't fly but one wonders whether the concept of the flying loop in the WS No. 13 might not have played some part in the design process. Both were decidedly bizarre.

Conclusion

And so, despite the remarkable efforts of A R Pepin and his boys at Marlborough College the British Army went in the Second World War without any viable VHF equipment. All the eggs were in the HF basket. This state of affairs was to have serious consequences during many operational situations and none more so than during the battle of Arnhem in September 1944.

Acknowledgements

I must thank Colonel Cliff Walters, a previous director of the Royal Signals Museum, for drawing my attention to the correspondence of 1969 between two retired Brigadiers (WDJ Harries and W Scott) from which this fascinating story emerged. Likewise Mr N R Cleminson of Marlborough College who as Mr Pepin's successor as CO of the College's Royal Signals Troop – a prestigious title bestowed on the Marlborough CCF following their signalling achievements – provided me with much inside information of those heady days when the other Marlborough showed the War Office how it should be done.

COLONEL HLL (BERT) HOWES, VHF PIONEER

By Dr Brian Austin

Colonel HLL (Bert) Howes, now 96, was Director of Signals in South Africa during the late 1960s. He is still with us, lives with his wife in Johannesburg and is in occasional e-mail contact with the author. He received his amateur radio licence (call sign ZS1AL) in Cape Town in 1935 and is still occasionally to be heard on the amateur bands - the longest serving member of the South African Radio League and probably the oldest surviving radio amateur in the country. The photo of Bert Howe alone with the equipment mounted on his chest reminded me of the 1940s photo of the Marlborough corporal demonstrating the CCF VHF set to some visiting officers. His equipment operated at '56Mc/s' so he and Mr Pepin in the preceding article had much in common during the mid-1930s. Needless to say his amateur radio involvement saw him join the SACS at the outbreak of war and he served in the SADF until his eventual retirement in 1980.



In 1934, the 19 year-old Bert Howes climbed Table Mountain in Cape Town with his homemade 56 Mc/s transmitter and receiver strapped to his chest. From that lofty vantage point he made contact (illegally, as he did not obtain a licence until a year later!) with the few radio amateurs around South Africa's 'Mother City' equipped to operate at such high frequencies. The incident is recorded in the photo above.

Two years later he and his radio equipment went even higher – in the cockpit of a Puss Moth biplane being flown by Major Meredith, Chief of Staff at Cape Command. The occasion was the South African Grand Prix and Bert's VHF wireless provided a solution to the communication problems around the circuit by acting as the airborne relay for the two stations situated at the extremities of the track. This was probably the first air-to-ground contact on VHF in Africa and the young Howes was well on his way to a career as a signaller in the South African Army.



Col HLL Howes (D Sigs) presenting a long service medal to his wartime colleague Commandant (Lieutenant Colonel) Jack de Klerk in 1968.

His military career had actually started some three years before when, as a boy soldier, his prowess with a rifle saw him rapidly promoted to LCpl in the "Dukes", the Duke of Edinburgh's Own Rifles, one of the city's oldest Citizen Force battalions. But it was his skill with wireless that drew him to the attention of the authorities, including the PMG, on the double count of operating an unlicensed wireless set in an aeroplane without permission! Despite this, Bert's transfer to the South African Corps of Signals (SACS) soon followed and in November 1936 he was sent to the Military College in Pretoria to be trained on the Army's latest acquisition, the Wireless Set No.1. In 1938 he was commissioned as a second Lieutenant in the SACS and was posted to 3 Brigade Signal Company stationed in Cape Town.

At the outbreak of war Bert Howes was Wireless Officer in 10 Brigade Signal Company, and he became heavily involved in training the signallers of 1 SA Brigade then forming for service "up north". War service took him to

East Africa, the Western Desert, then back to various training bases in South Africa and finally, as acting OC to 17 Brigade Signal Squadron as part of 6 SA Division in Italy under the command of Major General Evered Poole CB,CBE, DSO.

Colonel H L L Howes was OC School of Signals from 1959 to 1963 and then Director of Signals until 1968. He finally retired from the SADF in 1980 after 47 years of service. A radio pioneer in every sense of the word, and still an avid experimenter on VHF as ZS6HS, Bert Howes is now the longest serving member of the South African Radio League. He and his wife live in Johannesburg.

On being shown the above article, Colonel Howes contacted me from South Africa and added the following:

In 1937 in I went on a secret visit to the Army College to be instructed in the new (!) Wireless Set No 1 - me being Private Howes of 3 Brigade Signal Company – and I found the set amusing. A1V2 receiver which was not as good as mine - a 1V1 which had the new 6 volt tubes, an RF stage shielded and a very smart smooth reaction control which took much experimentation, with a metal panel replacing ebonite to prevent hand-capacity This also worked on 10 metres where I helped ZS1H to work the world!

But the Army now had an HF equipment and had not heard of VHF! At same time, we the hams were on 5 metres, with home made rush-boxes providing good communications all over the peninsula. I used one from Table Mountain - from an aircraft for traffic control for the Pollsmoor Grand Prix motor races and during our annual manoeuvres at Cape Point from a Wapiti aircraft of the SAAF (I introduced VHF to the SAAF !)

And so we went to war with the Wireless Set no 1 but fortunately a few Collins 18M were provided to 10 Brigade Signals for use in East Africa, so we had good communications. Horace Dainty saved the day by producing the M17 for the rest of the Army.

After the war with brilliant work by Frank Hickman, the first ALL transistor VHF packset in the world, the A39SA, was issued in large quantities to the Commandos (the USA still had a valve in the final of their equivalent). Variations were provided to the Rhodesian Army. The frequency range was just above 30 Mhz

The RS 38 and 48 were used after the war and were used with great success during exercises to replace the 19 Users were amazed at the quiet reception compared to the crashes and bangs of the HF No 19 set. VHF FM won the day, and so on to the C42 and its successors

GCHQ

The Uncensored Story of Britain’s Most Secret Intelligence Agency

By Richard J Aldrich



The author is Professor of International studies at the University of Warwick, and is an established commentator for the serious press on war and espionage matters. In the production of this volume he has achieved a notable feat of selection, compression and exposition, all the more remarkable for having been compiled from open source material.

The importance of GCHQ as a source of intelligence is only starting to become known, although Denis Healey in 1984 had described GCHQ to the House of Commons as “...by far the most valuable source of intelligence for the British Government ever since it began operating at Bletchley during the last war.” The topic is one of universal fascination, not least for successive Prime Ministers, who, according to one British Ambassador in Washington had a particular love of the “special little boxes” in which the material was delivered.

The author starts from the earliest days, recounting how Rudyard Kipling first construed in 1904 the intelligence potential of the radio messages developed two years earlier by Guglielmo Marconi. Alas, there had been no code-breaking or intercept facility in Britain for more than fifty years, something that was only put right on the eve of the First World War, when fears of German espionage brought the security services well and truly into being.

Successes during 1914-18 led to the formation of the Government Code and Cypher School (GCCS) in 1919, complete with a cover story which was to last into the 1980s. Similarly, the preponderance of naval signals and intelligence officers at the time was to lead to a continuing influence for decades to come.

The book describes how the inter-war years saw a steady growth in importance, as Britain tried to keep pace with the perceived developing threats from Germany and the Soviet Union. It is interesting to learn that the original Enigma machine was an off-the-shelf commercial machine widely used by banks and businesses, before being taken up by the German military. With the developing threat of war, GCCS moved to Bletchley, a location perceived to be out of reach of the expected bombing raids.

The author summarises vividly the work of GCCS during the Second World War, including the establishment of relations with the USA which saw the technical capability of the latter deployed over the wider outposts of the Empire, to the benefits of both. The term GCHQ was originally used as a cover as early as 1939 and by 1945 had come to be accepted. After this time, the intelligence efforts of the western allies were focused on the Soviet Union, and the startling code-breaking success of the Venona project revealed just how unimaginably vast the Soviet threat had become.

For the next forty years, GCHQ was at the centre of the espionage battle against the Soviet Union, and there are full accounts of the activities of naval vessels, secret tunnels and field agents, together with sober assessments of the impact of the Cambridge spy ring and George Blake. The developing close association with the National Security Agency in the USA is fully covered, as are the roles played by the leading figures on both sides, including Clive Loehnis, Richard Nixon, Richard Helms and Sir Edward Heath.

A severe drawback to the work of GCHQ was the famous ABC trial in 1978, when two journalists were prosecuted under the Official secrets Act for revealing the role and location of many of the national Signals intelligence assets, including GCHQ. The Government’s case was compromised when it was discovered that much of the information concerned was in fact available on open source material, and an accommodation was sought, at almost any price. The defendants were eventually convicted on minor charges only, but the die had been cast, and GCHQ was thrust unwillingly into the public view. Further damage was done by the publication of a book called “The Puzzle

Palace”, which was meticulously researched from open sources, and later came to be employed by the Soviet Union and China to target Western intelligence activities.

Other revelations were in train: the Ultra project, the work of Bletchley Hut Six and finally the publication of “Spycatcher” all made it impossible to cloak or deny the activities of GCHQ for any longer. The subsequent Government clamp-down on further revelations was hardly unexpected. The embarrassments were to continue, however; the unmasking of Anthony Blunt as the “Third Man”, and the arrest of Geoffrey Prime on espionage charges were to dovetail unfortunately with the exposure of the Walker spy ring in the USA to bring GCHQ further into the news.

The book goes on to describe the run-up to the Falklands War, and the role played by GCHQ and NSA as the conflict unfolded, all under the watchful attention of Soviet intelligence gathering assets. Problems of coordination and communication were soon manifest, as local assets were found to be collecting strategic material, while facilities in the UK were turning up information which was obviously tactical, and passing the output to the right quarter took time. The author describes the subsequent period leading up to the end of the Cold War as being a testing time for the special relationship between Britain and the USA, brought about by personality and policy clashes between the leaders on each side, and concerns over budgets and the shared use of assets.

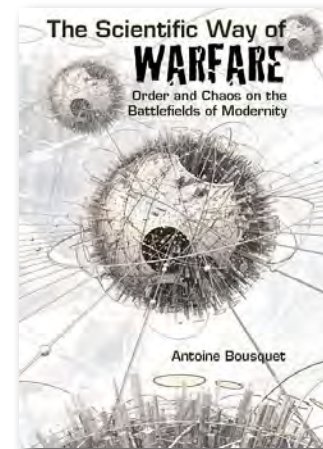
In the years which followed, even GCHQ was not immune to the demands of the peace dividend, and several key assets were lost in the economic cutbacks. The transition from Cold War to “Hot Peace”, as the author terms it, brings us up to date with the focus of attention turning to the Middle and Far East, and the advent of the hugely expensive Intercept Modernisation Programme. All of these developments are covered with a style and brisk authority which gives testament to the thorough research and appraisal so characteristic of the author’s approach. This volume is all the more interesting for not having the stamp of an official history, and thus unlikely to have been unduly influenced by perceived Government interests. It is highly commended as an indispensable reference to everyone interested in the signals intelligence arena, and to all those who would seek to realise just how big a role this activity played in shaping political events of the last sixty years.

Colonel Tom Moncur

Published by Harper Collin, 666 pages, ISBN13 978-0-00-727847-. Obtainable from Amazon £18.82.

THE SCIENTIFIC WAY OF WARFARE: ORDER AND CHAOS ON THE BATTLEFIELDS OF MODERNITY

By Antoine Bousquet



Antoine Bousquet is a lecturer in International Relations at Birkbeck College, University of London and this book is the product of his doctoral thesis. It is an examination of the relationship between warfare and science, and how, as the author states:

‘...the manner in which scientific ideas have been systematically recruited to inform thinking about the very nature of combat and the forms of military organisation best suited to prevail.’

He postulates that since the first real impact of science on warfare there have been four different scientific ways of warfare which he categorises as: *mechanistic*, *thermodynamic*, *cybernetic* and *chaoplexic*. Each he characterises by a key technology (the clock, the engine, the computer and the ‘network’ respectively) which, with their associated scientific concepts, act as metaphors for the resulting form of warfare. The underlying premise is that throughout the history of modern warfare the military has continually turned to science in its attempts to impose order on the chaos of the battlefield.

The *mechanistic* way of warfare was that which existed in the seventeenth and eighteenth centuries. Characterised by drill and rigid tactical deployments, it imposed order through the creation of military organisations that worked like ‘clockwork’. The author cites the example of the Prussian Army of Frederick the Great as the zenith of this form of warfare. The *thermodynamic* way of warfare spanned the Napoleonic era through to the end of the Second World War. Powered by the engine, a form of warfare emerged that was characterised by mobilisation, motorisation and industrialisation and reached its pinnacle with the use of the atomic bomb at the end of the Second World War. The third period of warfare, *cybernetics*, brings us closer to today with the automation of command and control enabled by the computer, with the Cold War as its peak. The author postulates that the final, *chaoplexic*, way of warfare is where we are moving to now. It is characterised by the central tenets of what the Americans call Network-Centric Warfare (NCW) or in the UK, Network Enabled

Capability (NEC). Bousquet's coverage of the first three ways of warfare is very much an historical review. His perspective provides some interesting and novel views on the development of warfare over the last three hundred years. His approach is very academic; as a result this is a very rich and erudite text, and at times a little hard going. It is really only in the last third of the book that he tackles some of the issues that, I suspect, the average reader of the Journal might be interested to explore. In this final section of the book his central premise on Chaoplex warfare is that:

'...despite a clear move in the direction of a new non-linear way of warfare, network-centric warfare still remains mired in cybernetic conceptions.'

By this he means that progress to date has, and remains, largely in the automation and computerisation of command and control systems. It has not delivered the radical organisational and conceptual changes necessary to enable the transformation of warfare envisaged by the original NCW gurus such as Alberts, Gartska, Stein and Cebrowski. He does however recognise the difficulties in doing this and the dichotomies it raises. Improvements in the 'network', enabled by high-speed data links, will create superior battlefield situational awareness and allow the 'network' to become all pervading. This leaves a wide left and right of arc in our choice of how to exploit the opportunity. On one hand increased connectivity, and the consequent wealth of information, would enable a very strong centralised control to be exercised by a commander with a very flat command structure. Alternatively, the perfect, omnipresent, network could allow all force elements, however small, to have the same shared situational awareness and therefore enable the self-synchronised 'swarming' behaviour envisaged by NCW purists. Bousquet suggests that although these possibilities are starting to emerge, the issue remains the military's ability to effect change.

'According to network-centric warfare, these huge volumes of information and the resulting superior battlefield knowledge are supposed to be the basis on which force-multiplying decentralisation and self-synchronisation can be achieved. However, such a scheme jars with much of the historical evidence on the successful practices pertaining to the organisation of armies.'

It would be easy to dismiss this book as specialist academic territory and indeed the first two thirds would probably fall into that category. However, the final third asks, and in part answers, some of the fundamental questions that we need to address before we continue our NCW and NEC quests. Not the least of these is, do we have the intent, vision, culture, and resources necessary to fully achieve the full potential or are we content just to automate our existing processes?

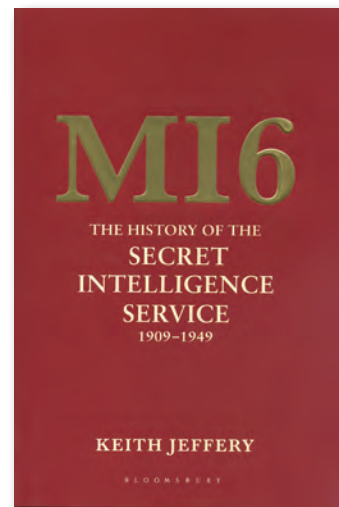
Colonel Iain Standen

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MI6

The History of the Secret Intelligence Service 1909 – 1949

By Keith Jeffrey



This history of the first forty years of the Secret Intelligence Service or SIS is unusual in having had the full cooperation of the Service throughout, extending to a foreword by the existing Chief. This underlines the unrestricted access to archives enjoyed by Professor Jeffrey, and the pains taken to ensure as much openness as is consistent with the need to protect agents and sources, as well as recent archive information. Hence the decision to halt the history in 1949.

The author has also had access to other Government department records, which helped place SIS in a wider context, and most primary sources, interestingly enough, are fully open to the public, including some in foreign archives. An extensive clearance process with partner agencies and other departments ensured that this history does not damage national security, and remains consistent with Government policy. This caveat does not diminish in any way the status of this fascinating volume as a landmark in the annals of our intelligence communities.

In his introduction the author acknowledges the difficulty of writing a history of an organisation whose habit is to routinely destroy all written material not needed for reference, a fact which frustrated the ambitions of a previous Chief to spend his retirement writing an account of the early days of the service. The author is convinced that this destruction was not done maliciously in an attempt to cover up mistakes or embarrassing episodes, and the fact that the organisation occupied no fewer than six different premises in its relatively short existence played no small part. Fortunately, over time some documents were acknowledged as having real historical value, and have been preserved.

The first Chief of the Service was the colourful and redoubtable Commander Mansfield Cumming, who in

1909 formed the Secret Service Bureau together with Captain Vernon Kell, later to become the long serving Chief of MI5. The new department was sponsored jointly by the Foreign Office, Admiralty and the War Office, and the predictable jostling for control and influence was to continue for the next forty years. The Bureau was established in response to the increasing influence of imperial Germany, and the acknowledgement that the global economic lead built up by the British Empire through the nineteenth century was being eroded.

The emphasis on Germany continued up until the outbreak of the First World War, when the organisation had to expand through the use of well placed agents overseas. Many of these, however, were less than reliable, often selling information to more than one customer, and subject to ownership claims from the competing sponsors of the Bureau. The account of the Dame Blanche spy network and some of the more exotic personalities involved is fascinating, as is the extent of the Bureau activities Europe-wide and beyond. Most individuals were enthusiastic amateurs, whose jobs, status or command of languages made them particularly effective as agents. Car salesmen, diplomats, fishermen and engineers were all employed at various times. By 1918, the situation in post-Czarist Russia took precedence, and set the scene for the inter-war years.

The next twenty years was to see the rise of the twin challenges of Communism and Nazism and the emergence of SIS as a service separate from MI5. The advent of Colonel Menzies as Chief in 1939, and the increasing influence of the Service as the war progressed are fully documented. The post-war assessment of intelligence needs saw the Chief reckoning as “one million pounds a year” being about the minimum needed to sustain operations, and sets the scene for the spy scares and anti-Soviet activities of the late 1940s.

The book quotes the opinion of famous spymasters of the past that it takes forty years to establish a truly efficient secret intelligence service. By this consideration, in 1949 MI6 had just about come of age. In a book of over 800 pages in length, it is difficult to summarise the many fascinating and informative insights it offers into operations and their influence on world events, except to thoroughly commend this comprehensive, well-researched and authoritative volume as an invaluable work of reference and information to the serious historian and casual reader alike.

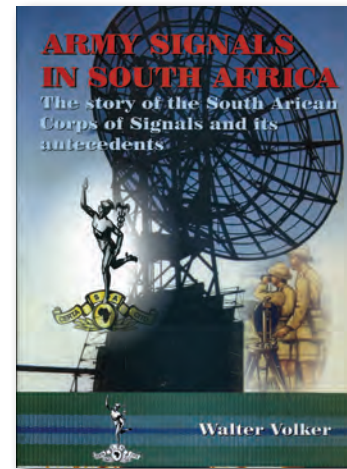
Colonel Tom Moncur

Published by Bloomsbury Publishing Plc, 810 pages, ISBN 978 07475 91832, obtainable from Amazon £16.50.

THE SOUTH AFRICAN CORPS OF SIGNALS

A three-part history

Compiled and edited by Walter V Volker



This is a weighty record of a corps of signals almost as old as the Royal Corps of Signals upon which it based its symbols and traditions, and from which it derived its motto, colours and modus operandi. The author/editor, a former officer in the Citizen Force (the equivalent of the Territorial Army) of the South African Corps of Signals (SACS), has put together a most comprehensive account of signalling in southern Africa from its beginnings well before the Boer War to almost the present day. The three large books, each of which runs to more than 600 pages, are sure to become the definitive account of military communications within South Africa's army spanning more than a century.

The Army is by far the largest component of the South African National Defence Force (SANDF) and its Corps of Signals is one of its oldest components, tracing its formation to 1923 and that of its School of Signals to a decade earlier. But political change and a surge in nationalism amongst the peoples of the country at different points in their history have seen many shifts in allegiance, and with them changes to the name by which its military forces is known. Those who served as Britain's allies in the Second World War were members of the Union Defence Force (UDF) but after 1948, and the ousting of the Smuts government and the drive of Afrikaner nationalism eventually took the country out of the Commonwealth and into increasing isolation (and arms embargoes) as a republic. Thus the UDF became the SADF, which is how it remained for almost fifty years. Then nationalism of a different hue saw the release of Nelson Mandela and the election of the first truly democratic government in South Africa in 1994. This necessitated another change of name to the SANDF of today.

And while all this was happening the SACS too underwent its own evolution. From being predominantly British in origin and outlook, while using equipment almost exclusively manufactured in England, both the ethos of the SACS and

the hardware it used saw major changes during those years when Afrikaner Nationalism dominated all facets of South African life. English-speaking South Africans almost disappeared from the highest ranks of the Army, while the radio equipment in use became almost entirely locally-produced. Whereas politics was common to both, the flourishing South African electronics industry – and United Nations sanctions – drove the latter. Intriguingly too, the long-established Royal Signals colours of light blue (the sky), dark blue (the sea) and green (the land), managed to get themselves scrambled in the post-1960 SACS version where green became the dominant colour above those of the sky and the sea. Despite the strenuous efforts of the compiler of this history, and others, to uncover the reasons for these changes none was forthcoming, while some former SACS grandees even suggested that they were ever thus!

It is apparent from the text that 1959 was the year when change became the watchword: Jimmy lost his crown (and even his laurel wreath in some circumstances) while gaining a ‘message flask’ in his hand raised high. In the army at large, the Sam Browne soon disappeared too as did ceremonial swords while those regiments with long and proud links to their British forebears, such as the Cape Town Highlanders, the Transvaal Scottish and the Imperial Light Horse, came under considerable government pressure to break all those British connections. Thus, according to a SACS scribe of 1972 when describing the new Unit Colour of the School of Signals, the Corps was now ‘free from all foreign shackles’.

All three volumes of this substantial trilogy contain accounts written by numerous retired signallers, as well as some by the SADF historical branch, on the formation of the SACS in 1923 and the part it played in various minor wars and skirmishes before WWII. Huge changes followed events of September 1939 and we then read of South Africa’s development and use of radar equipment in the very earliest days of the war following Britain’s disclosure to its Dominions of this top secret technology. The Special Signals Services (SSS) of the SACS was responsible for this ‘hush hush’ work and it remains one of the highlights of South Africa’s wartime signals activities. Also mentioned is the even more secret high frequency direction finding (HFDF) section known only by its cover name, the ‘Price-Milne Organisation’. It was set up both to trace German agents in the country who were in radio contact with their embassy in Mozambique and to track German submarines when they surfaced at night off the South African coast to recharge their batteries and to communicate with their headquarters. Away from the clandestine world we find the SACS operating with great efficiency throughout the East African campaign to wrest Abyssinia from the Italians, in the Western Desert under British 8th Army command and as part of the 6th South African Division in Italy.

Regrouping after the war, the UDF shrank drastically as thousands of men returned to their civilian occupations.

By 1960, when the winds of change forecast by Harold Macmillan began to blow ever more fiercely across Africa, the SADF soon found itself engaged in low intensity warfare, especially on the northern border of the disputed territory of South West Africa (now Namibia). With Rhodesia’s declaration of unilateral independence from Britain in 1965, and the collapse of Portugal’s African colonies a decade later, military involvement became considerably more widespread and the SACS was involved in all of it. With backing from the Soviet Union and China, as well as active involvement by Cuban troops in Angola, the guerrilla forces fighting colonial rulers in many of South Africa’s neighbours, as well as those from its own African National Congress (ANC), constituted a major threat to South Africa. This caused the South African government to ramp up military expenditure and the SACS benefited significantly by way of new equipment, much of it already locally designed and manufactured. A specialist electronic warfare (EW) unit headed north in support of the Rhodesian forces in 1969. Known as Op Falcon, the SACS personnel wore Rhodesian uniforms and ID and located themselves on the country’s northern border with Zambia where they served until 1976. Remarkably detailed accounts of these clandestine activities are scattered throughout the three volumes.

Major SADF military operations followed both on the border between South West Africa and Angola, as well as deep inside Angola itself (though the South African government denied this vociferously at the time!). The enemy, initially, was SWAPO (South West African Peoples’ Organisation) but later those guerrilla/terrorist forces were aided by FAPLA troops from Angola who in turn were supported by Cuban forces with both armoured and airborne support using tanks and aircraft supplied by Russia. The SADF, with the SACS providing all tactical communications, was fighting a conventional war with greatly extended supply lines and it was testament to the signallers and their equipment that communications proved to be one of the great success stories of those battles. Again, the books contain many personal accounts by serving signallers of their experiences in all these encounters. By the late-1970s all SACS equipment was being produced locally by three major electronics manufacturers, Fuchs Electronics, Barlows Communications and Racal (South Africa) that became Grinaker Electronics after Racal withdrew following the 1977 UN arms embargo imposed on South Africa. Of these, Racal/Grintek produced the most innovative radio communications equipment beginning with the world’s first solid state SSB manpack, the TR28 (B16), followed by the fixed and vehicle-mounted TR15 (C23) and TR15H (C27), the first frequency-hopping HF set in the world. Fuchs produced French-based HF equipment while Barlows dominated the VHF scene with a range of manpack and vehicle-mounted equipment, most notably the A55 and B56 FM equipments.

Also described in some detail are the two major command and control communications systems, one fixed

and one mobile, which were drawn up by the SACS in the 1960s and implemented over the following two decades. Known as Projects EBBEHOUT and NETOR these tropospheric scatter radio systems, using equipment supplied by Marconi in the UK, provided the backbone for all SADF strategic communications throughout the duration of the 'border war' and they constituted a major engineering and project management achievement of the SACS.

Details of all the signals units (and their emblems) that ever existed within the SACS structure are contained within the second volume while the third is dominated by the photographs and pen portraits of more than six hundred men and women who served in the SACS (and even earlier). As always, they make interesting, informative and occasionally amusing reading. In addition, a number of senior officers and NCOs provided accounts of their careers, some in anecdotal form others in quite considerable detail, and these too are enlightening. Not surprisingly some of those became generals with one, Gen G L Meiring, becoming the last Chief of the SADF and the first Chief of the SANDF, under the Mandela government. No mean achievement for a signaller!

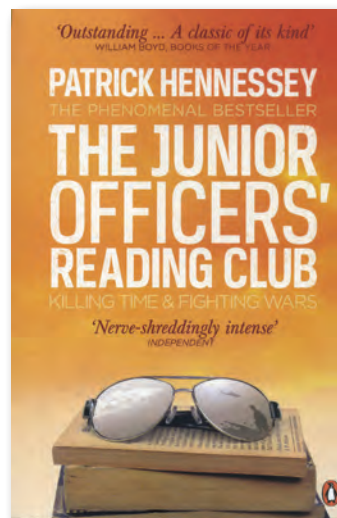
The three volumes also contain numerous photographs, tables, maps and diagrams as well as detailed lists of appointments, equipment and complete listings of all references cited throughout the text. Unfortunately none of the books contains an index and that will make them somewhat difficult to consult for research purposes. However, taken overall – and ignoring the duplication of some material, which is perhaps a pitfall of any major undertaking like this – Walter Volker has produced a magnum opus which constitutes a remarkable record of a signals corps with a very long and proud history.

Dr Brian Austin

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THE JUNIOR OFFICERS READING CLUB

By Patrick Hennessey



This book was given to me as a gift by a friend in late 2010, some 18 months after it had been published. I hadn't heard of it, seen it on any shelf or read any reviews about it. I was therefore pretty sceptical when I finally got round to reading it. In this modern portrayal of life as a junior officer, Patrick Hennessey describes his time at Sandhurst, followed by Peace-keeping in Bosnia, public duties in London and then deployment to Iraq and later Afghanistan. The tone throughout the book is that Hennessey has a thirst for adventure and an almost primeval desire to kill – only really satisfied in the second half of the book when he finds himself engaging 'Terry Taliban' in Afghanistan.

The book certainly is well written and it is clear that Hennessey's English degree from Oxford was well deserved. He mixes very dry humour with the harsh realities of war, opening the public's eyes to the British Army's routine when preparing for and deploying on operations.... I am just not sure he needed to.

Having been through 'the system' at roughly the same time as Patrick Hennessey, I would question whether he has hit the right tone about the way the Army conducts its business. There is a great deal of rhetoric about the fact that the Colour Sergeants at RMAS use 'IRONING and SHOUTING' as a way to train the Army's future officers. Of course he is right but now any "outsider" that reads this thinks that's all that RMAS is about. There is little mention of the reason why such high standards are set, why the training programme is the way it is and what's it like to be part of the tradition.

Likewise when Hennessey takes us to Brecon on exercise during the Platoon Commanders' Battle Course, he uses the opportunity to point out the things that frustrate him rather than how effective (or not) the training was in preparing him for his role.

The story of the tour to Bosnia shortly after RMAS tells of a multitude of guardsmen seemingly sitting around perpetually bored and waiting for some contact, some action and generally something to happen. That may be the realities of such a peace-keeping tour (I wouldn't know) but again Hennessey seems to miss the point. The theme continues when we visit Iraq with Hennessey where he describes the boredom and the endless sunbathing, again waiting for something to happen. Why is there no mention of the way he and his fellow officers use the time to develop their Guardsman, conduct fitness training and improve their own knowledge by studying MK1, etc? The reason, I believe, is that it just wouldn't make for interesting reading. What he has done though is once again to portray the completely wrong opinion of the Army to the public.

Now don't get me wrong, the part of the book dedicated to Afghanistan is fascinating and tells 'the truth' about life deployed on a high intensity operational tour. We experience firsthand the realities of contact with the enemy, the impact a suicide bomber has on the Company and the bonds that occur between soldiers under those sorts of pressures. Not to mention the frustrations felt with the MOD and the equipment procurement process. Indeed the way in which Hennessey describes his homecoming and the frustrations he has with the apparent lack of understanding by friends and family rings true certainly in my own operational experiences, and I daresay, for others also.

My main criticism of the book is that it seemed to have been written by an Army Officer for Army Officers. The constant use of military jargon and abbreviations make the work difficult to understand unless one is of military background – my brother keeps asking about certain sections. In my opinion the book should have been aimed solely at the Forces community. It is now on the recommended reading list for RMAS (and rightly so as Sidney Jary's 18 Platoon, although a fascinating read, is probably a little dated) and certainly most of the junior officers I know have found it of value. If there were such thing as a 'Restricted' novel then this should be it. And it would be brilliant.

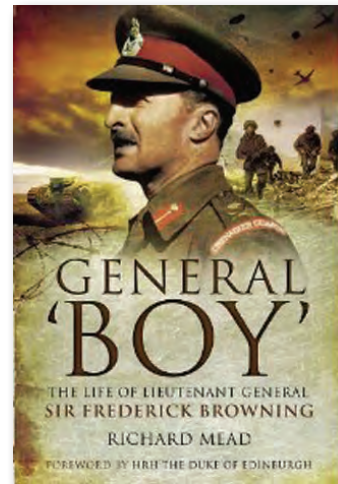
Captain Andy Rea

Published by Penguin, 336 pages, £9.99. ISBN 978-0-141-03926-8

GENERAL 'BOY'

The Life of Lieutenant General Sir Frederick Browning

By Richard Mead



Few senior commanders from the Second World War have been treated with almost equal amounts of derision and downright obloquy as 'Boy' Browning, the Commander of the British 1 Airborne Corps during Operation 'Market Garden', the Battle of Arnhem. But then few men in such senior positions attracted quite as much attention to themselves for reasons unconnected with their military prowess, but all to do with their manner, demeanour and particularly their impeccable turn-out, as Browning did throughout his long and distinguished career. Many of the most outspoken (and, as we now discover, unfounded) criticisms of him only emerged in print after he died. And none did more to embed those negative images in the public mind than the film 'A Bridge Too Far', of 1977.

That Browning chose not to follow many of his fellow wartime commanders by writing his memoirs meant that we were never presented with his point of view. Intriguingly, we learn in the introduction to this the first biography of Browning to be published that he even went so far as to obtain undertakings from some on his staff that they would not cooperate with potential biographers. Even after his death, his family were unenthusiastic about a biography, and most surprising of all, his wife, the highly-regarded novelist Daphne du Maurier, refused to write about him. All this makes the publication of Richard Mead's excellent account of the life of one of the most intriguing yet least studied (and arguably the most misrepresented) of Britain's generals long overdue.

Frederick Arthur Montague Browning, Tommy to his family, was born in London on 20 December 1896. His father was in the wine trade and was well-connected. An uncle, also bearing the name Montague, was an admiral who retired in 1925 as Principal Naval ADC to King George V. The young FAM Browning was educated at Eton where he joined the Army Class in 1913. Among his contempo-

aries were Anthony Eden, a future Prime Minister, and Oliver Lyttleton, Churchill's wartime Minister for Production. After Sandhurst, where Browning was noted for his exceptional smartness of dress and boyish enthusiasm, he was commissioned into the Grenadier Guards in 1915. It was that latter personal characteristic which led to all except his family and closest friends calling him 'Boy', a nickname that stuck with him for the rest of his life.

Early in action, Browning's first experience of the trenches took place near Loos where he was in command of a platoon. He was soon to be invalided back to England, not as a result of military action but because of a debilitating stomach condition, amongst other complications. This was to be an on-going cause of annoyance to Browning and may have been symptomatic of deeper, possibly psychological, problems. To all in the army, he was the epitome of the ideal infantry officer: strong, confident and decisive, and an impressive man with all the potential to achieve the highest rank. But in private, and especially after his marriage, he seemed surprisingly reticent and required his wife to be his constant emotional prop. Their marriage with its self-evident contradictions and emotional vicissitudes forms an important and intriguing strand throughout this fascinating biography.

Browning was awarded the DSO following an action near Arras in November 1917, but suffered recurring nightmares for years afterwards. His reputation as an exceptionally well turned out officer and a trainer of men was enhanced considerably when, soon after, he took a party of men and mounted a Guard of Honour for the Colonel-in-Chief, the Duke of Connaught. None of those who watched could believe that these men whose smartness and performance on parade were exceptional, had come directly from the trenches and not from the Guards' Depot in England. Browning's subsequent reputation for punctiliousness and his perpetually well-groomed appearance, soon to become his trademark, gave no quarter to the privations of war – even at its most foul.

In 1924 Browning returned to Sandhurst, as Adjutant. This was a remarkably successful appointment as he set out to lift the standards of the peacetime army. Probably his most memorable contribution to Sandhurst ceremonial was in June 1926 when at the completion of the Commissioning Parade he rode his white horse Spook up the steps and into the Old Building thus establishing a tradition that continues to this day. On resuming regimental duty four years later his health was again a cause for concern. Personal problems exacerbated by the death of his father only added to his woes, and he was granted a lengthy period of sick leave.

After recuperating he returned to the Grenadiers' 3rd Battalion and bitter disappointment: he was now too old to enter Staff College. It was around this period that Browning married Daphne du Maurier. Their backgrounds could not have been more different. She was immersed in theatre

and the arts and had a deep love of Cornwall; Browning's world revolved around London and the Army. He was very gregarious while Daphne, decidedly Bohemian to many, was a lone wolf. But they shared a love of the sea, and boats became their bond. In time, however, she was to become much the stronger personality in their personal world.

The outbreak of the Second World War saw Colonel Browning as Assistant Commandant of the Small Arms School. Promotion to Brigadier followed quickly, and by late 1941 he was commanding a Guards Brigade Group. After impressing the C-in-C Home Forces, General Brooke (soon to become CIGS), he was selected to command the Airborne Division. Characteristically, Browning immediately elected to learn to parachute – an activity he never enjoyed – and went on to learn to fly, which allowed him to wear the wings of the Army Air Corps.

What happened next has become part of the folklore of the British Army. Few battles in recent history have produced as many volumes of print or as much conjecture, speculation and mud slinging as the Battle of Arnhem. This account of the life of one of the key players in that saga is refreshingly different. The new light it sheds is due, at least in part, to Richard Mead's impressive list of bibliographic sources and references. But equally, if not even more important, was the access he had to Browning's papers and correspondence, particularly with his wife. Since Browning has possibly attracted more of the blame for the fiasco of Arnhem than almost any other officer involved, Richard Mead subjected the charges made against him and the evidence from numerous sources, both for and against, to the judicial process and announced his findings in a fascinating chapter he called 'Verdict'. It makes compelling reading.

Richard Attenborough's film 'A Bridge Too Far', mentioned above, was based on the book by Cornelius Ryan that had been generally well received when it was published in 1974. By contrast, the film of three years later attracted considerable criticism, especially in its portrayal of Browning as the villain, and the Brits as the bunglers. The film's director clearly had his American audiences in mind. Browning's wife, no stranger to the liberties taken by film directors when turning literature into screenplay, was concerned when news of the planned film first reached her. She wrote to Attenborough asking for sight of the screenplay and was horrified when she saw the unflattering light in which 'Boy' was to be cast. At her insistence Attenborough agreed to make certain changes, but Dirk Bogarde's subsequent portrayal of Browning, as well as many liberties taken with factual accuracy, caused dismay amongst those who were there and who knew Browning. Daphne herself refused to see the film. Letters appeared in the Times and elsewhere expressing their writers' concerns about the accuracy of the film and their disgust at the portrayal of Browning as a self-seeking, heartless officer – a dandy, even – when all who knew him disagreed

He saw out the war as Chief of Staff to Mountbatten at South East Asia Command (SEAC), not a posting that especially pleased him, but enabled him to relinquish field command with which he had become disillusioned. The administrative load was very heavy, and by the war's end his health had begun to suffer, and he was drinking and smoking far too much. In July 1946 he returned to England and to his wife, but things had changed. To her he was no longer the dashing officer she remembered. She had become increasingly independent as a very successful novelist and was financially secure, which he was not.

Browning became Military Secretary which soon saw him back in London while Daphne remained in Cornwall. In just over a year he retired from the Army and was appointed to the Royal Household as Comptroller and Treasurer to Princess Elizabeth. The influence of Mountbatten was key, and his letter to his nephew, the future Duke of Edinburgh, was fulsome in its support for 'Boy' in this role. This second career turned out to be remarkably successful for all concerned, and after the accession of the Queen, he became Treasurer to the Duke of Edinburgh, who has written a generous tribute in the Foreword to Mead's book.

In 1957 Browning suffered a nervous breakdown. There were many possible reasons for his condition: his relentless pace of work, his on-going stomach problem, the nightmares that had dogged him ever since 1917 (and very likely exacerbated by Arnhem), his excessive consumption of alcohol and, probably the issue that tipped him over the edge, his unfaithfulness to his wife, which he admitted. To compound matters, she admitted a wartime affair while also being tormented by her own sexuality. Had all this happened fifty years later it would have exploded in media headlines rivalling the detonation of Krakatoa. He had even hinted at suicide more than once. But he recovered, his marriage survived and he returned to the Palace.

However, it was evident to all that the time had come for 'Boy' to let go, and he finally retired in May 1959 after an audience with the Queen, at which she invested him as KCVO. Although active in his local community for some years, he was never the same man again, and his health deteriorated rapidly. His left foot had to be amputated and finally, in March 1965, he died quietly at home in Cornwall. Richard Mead has written a superb biography of a remarkable man who was born to be a soldier. It is regrettable that the overbearing demands of the motion picture industry for box office appeal should so distort the historical record by maligning the memory of this exceptional officer. If Mead's book achieves nothing else, it will have corrected the public record and that, we trust, will be 'Boy' Browning's true and lasting legacy.

Brian Austin

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THE WAR THAT NEVER WAS

The True Story of the Men who Fought Britain's Most Secret Battle

By Duff Hart-Davis



This book tells the story of unofficial UK 'skulduggery' in the Yemen – where patriotic but nonetheless mercenary activity drew on the skills and experience of wartime SAS and others. For those of us who – alas – remember the 1960s, it also offers a trip down memory lane. Set in the context of the Cold War, the narrative evokes vividly the preoccupations and values of that era. The title is a partly a misnomer: there was a war, but not one in which HMG was ever involved, either officially or unofficially. British mercenaries certainly were, and it may be true to describe their actions as Britain's most secret battle. For this was a Yemeni civil war: it followed a coup d'état in September 1962, in which Egypt supported the Republicans, bombing villages, dropping poison gas and indiscriminately killing hundreds of innocent families. The Yemeni ruler – a priest/king 'Imam' had survived the coup and taken refuge in a mountain stronghold. HMG dithered over whether or not to recognise the new Republic.

The idea of the mercenaries' involvement (a few were not British) to support the Royalists, arose over a drink in White's Club in St James's Street, and general disgruntlement about the deterioration (from the drinkers' perspectives) of the situation in the Middle East, "plus ça change". This genesis has the ring of truth about it: many a scheme has been founded in the bar of the Special Forces Club in Knightsbridge. The story is also the stuff of pure James Bond. The men in White's had power and influence: Brian Franks, wartime SAS commander, Alec Home, Julian Amery, David Stirling and Conservative MP, Billy McLean. They persuaded Jim Johnson, former CO of 21 SAS to 'sort out the problem in the Yemen'; he in turn persuaded Tony Boyle to become 2IC of what became the 'British Field Liaison Force' (BFLF). There was even a 'Miss Money Penny' – Stirling's niece, Fiona Fraser, daughter of Lord Lovat (who else?) sitting in a basement office in Sloane Street (where else?) providing the administrative support and channelling money to wherever it needed to go. Most of the operatives in the field are

said to have been half in love with her. High-level discussions in Whitehall, Questions in the House, extracts from coded messages and diaries, secret meetings in Mossad safe houses with General Moshe Dayan, wearing his black eye patch and audiences with King Saud and the Saudi Royal Princes in Riyadh contribute to a picture of international intrigue, power struggles and political machinations.

The author offers an interesting play between what the UK newspapers were printing in 1964 and what was happening on the ground in the Yemen. As with wartime operations in France, once in the field, mercenaries were managed with a very light touch from London. This relaxed governance allowed for a lot of local improvisation – and there was plenty. The account also contains many authentic flashes of hilarity, mixed with personal tragedy and perhaps inevitable turf battles, even among the mercenaries themselves. In terms of its role, the BFLF was confined to providing communications, military advice, training and medical help. At no time were mercenaries empowered to lead any military action. As the author points out, this limitation, combined with months of solitary living in flea-ridden caves and language difficulties with the people they were trying to help, made the task even more difficult. Only in early 1964 did arms and ammunition begin to drop by parachute, thereby avoiding hazardous and resource-wasteful overland delivery. However, one ‘windfall’ was that the Israelis supplied the parachutes for the arms drops: they had no wish to see Egypt successful in the Yemen. In London, a beatific Lady Birdwood publicly supported the medical efforts of the mercenaries under cover of the ‘Yemen Relief Committee’.

There were, apparently, at no time more than twelve UK nationals on the ground in the Yemen at any one time, so its masterminder, Jim Johnson, was constantly recruiting replacements. In the latter stages of the effort, he even followed a chap he’d just met on a train to proposition him, arousing temporary suspicions of a different sort of proposition! Key among the first mercenaries on the ground was Johnny Cooper, ex ‘L Detachment, 1st SAS, who brought with him the skills and resourcefulness of an SAS original, was an Arabic speaker and stayed the distance of the four-year engagement. Surprise tactics redolent of the wartime SAS in the Western Desert achieved similar success in the Yemen, forcing the Republican/Egyptian enemy to change his supply methods, and costing Colonel Nasser, Egyptian President, backed by the Soviet Union, dear in human and other resources. Via funds channelled through London, the mercenaries were all paid for by the Saudis: they did not care whether the Royalists or Republicans secured power in the Yemen but wanted Egypt off their back doorstep. Jim Johnson shines through in this book as a worthy opponent of Nasser, who later acknowledged the Yemen to have been his ‘Vietnam’. The Israelis went on to carry out daring arms drops over the Yemen, which were well planned and executed, with Tony Boyle on board for almost all of them. A plan for Israel to carry out air strikes on Egyptian aircraft on the ground – but with the Roy-

alists being seen as having done it – did not materialise. The reader is not told why, leading me to surmise that there is yet an untold story still waiting to be revealed. The climax of the book is a dramatic race against time to get the Egyptians out of the Yemen before the implementation of a February 1967 Government White Paper which would close Aden as a British base and end UK military support for the Federation of South Arabia. At this prospect, Nasser redoubled his efforts in the Yemen but Britain managed to secure a £1 billion aircraft and defence systems deal (nicknamed ‘magic carpet’ by the BFLF) under the noses of the US.

In November 1967, the BFLF had a sad but also proud ending. Jim Johnson had promised the mercenaries that they would one day march down the streets of Sana’a, the capital, in a victory parade. That didn’t happen. But Nasser lost the 1967 Six-day War with Israel while approximately one third of his available army was deployed in the Yemen; and that the author says was largely due to the efforts of Jim Johnson, Tony Boyle and the BFLF mercenaries. So they defeated the Egyptians but could not help the Royalists to win the peace. They probably also prevented Nasser from attacking Saudi Arabia long enough for the Saudis to shore up their defences. And even at the end of the Egyptian effort in the Yemen, Stirling was still at it, doing what he always did best, setting the strategic vision and writing proposals for more resources for a new task force for the Yemen.

In terms of technical competence, a useful map of the Yemen as at May 1964 shows the Egyptian and Royalist held terrain and the dispositions of the opposing forces. The list of dramatis personae with their approximate ages at the time, together with thirty-four illustrations, also help to describe the players, both operational and advisory, from among the Saudis, the Egyptians and Yemeni Republicans and the British. The book is sourced and has an index. It jarred a little to read that the SAS was founded in 1942, instead of 1941, and that Stirling and not Ralph Bagnold, had created the LRDG. The text would have benefited from further sub-editing. But these are minor niggles and did not detract too much from an overall well-crafted work. I enjoyed reading this book. I found it fascinating to catch glimpses of the real experiences of British ex-Regiment mercenaries and others whose lives are revealed through snatches of diary entries and conversations reported via the author’s interviews with them. But for me its value lies in the fact that the story has, at least in part, been put together and captured for posterity. Recommended.

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THE ROYAL SIGNALS DISTINGUISHED OFFICERS BOARD



Back Row, L to R: WO1 (YofS) Parr; Col Tom Moncur; Dr Anthony Morton; Wg Cdr Angus Deas; Mr Mark Birtwistle; Gp Capt Robin Birtwistle; Rev Stephen Dunwoody; Mr Hugh Anderson; Mr Simon Barrow; Maj Andy Aitken.

Front Row, L to R: Mrs Teresa Birtwistle; Mrs Fiona Deas; Mrs Sylvia Birtwistle; Maj Gen Tim Inshaw; Lt Gen Robert Baxter; Mrs Sheena Barrow; Col Hugh Robertson; Mrs Chantal Anderson; Lt Col Mike Anderson

On 5 April 2011, at a ceremony held at the Royal Military Academy Sandhurst, relatives of Major General Sir John Anderson KCB and Major General AC Birtwistle CB CBE were present to see their names added to the Distinguished Officers Board in Old College. The name of Brigadier Claude Fairweather CB CBE was also added, the first TA officer to be so honoured.

The relatives were able to meet some of the Corps staff serving at the Academy, and have a guided tour of the Memorial Chapel, before meeting the Senior Entry Officer Cadets destined for the Corps over drinks prior to lunch. Corps hosts for the occasion were the Master of Signals, Lieutenant General RG Baxter CBE, the Chairman of the RSI, Major General TG Inshaw CB, Colonel TF Moncur and Colonel H Robertson. Our photograph shows the assembled hosts and guests in the setting of the entrance hall to Old College.

The Chairman in his address underlined the significance of the Board in honouring those officers whose contributions to the Army and the Corps were of the highest, and who had gone on to give valued and exceptional service to the

civil community. He drew attention to the fact that only some thirty-six names featured on the Board, spanning the entire existence of the Corps, which gave some indication of the standards which had to be attained. The citations were then read out by the Secretary of the RSI, Colonel TF Moncur as follows:

MAJOR GENERAL SIR JOHN ANDERSON KBE



MAJOR GENERAL AC BIRTWISTLE CB CBE DL MA

Educated at King's School, Rochester and the Royal Military Academy Woolwich, General Sir John Anderson was commissioned into the Royal Corps of Signals in January 1936. After qualifying courses at The School of Signals and a year with 10th Infantry Brigade Signal Section and 4th Division Signals, he was posted to Egypt Signals in 1938, and soon afterwards transferred to the newly formed Egypt Mobile Division, which eventually became 7th Armoured Division. He was to serve in the Signal Regiment on active service as Troop Commander, Adjutant, Squadron Commander and operational Second in Command from 1939 to 1942, and could count himself a true "Desert Rat".



After attending the Staff College at Haifa in mid-1942, he was appointed to HQ Eighth Army just after the battle of Alamein, initially as one of General Montgomery's liaison officers, and subsequently on the Operations Staff as GSO2 Operations. He held this appointment through the remainder of the North African campaign, and ran the Tac HQ for the invasion of Sicily and thence into Italy. This was a significant achievement for a signaller, as these appointments were usually regarded as the preserve of the other teeth arms. He was mentioned in despatches three times by Montgomery for his services.

After the war, he rose in rank through a number of appointments both at home in London with the Horse Guards and overseas in New Zealand and the Federation of Malaya. Notably, he was to return to 7th Armoured Division as the last Commander, Royal Signals, before its disbandment. He returned to the War Office on promotion, and served in the Signals Directorate as Colonel and then Brigadier. In 1961 he was designated CBE. He was subsequently appointed Chief Signals Officer BAOR and attended the 1966 IDC course before being appointed Signal Officer-in-Chief (Army) in 1967. He moved to become Assistant Chief of Defence Staff (Signals) in 1969, the year in which he was appointed KBE.

After retirement in 1972, he became a Colonel Commandant of the Royal Corps of Signals and received the freedom of both Herford and Krefeld on behalf of the Corps. In 1976 he returned to full time employment on being appointed as General Manager of the NATO Integrated Communication Systems Management Agency in Brussels, a post he held until his second retirement in 1981. He was then asked to become the Honorary Colonel of the First Aid Nursing Yeomanry, and later Chairman of their Advisory Committee. He was elected President of the British Wireless Dinner Club and President of the Piscatorial Society. He also became an Executive Director of the Andrews Corporation and the Armed Forces Communications and Electronics Association in Europe. He and his wife Jean were married for 63 years, and with his death on 9th November 2007 we lost one of our most distinguished officers, mourned by many in the Corps.

Major General Archibald Cull Birtwistle was born in Northwich, Cheshire on 19 August 1927, and was educated at Sir John Deane's Grammar School, where he became head boy. Although rugby was the local sport, he had a trial for Burnley Football Club – news not well received when he got home! On 20 May 1945 he volunteered for the Royal Navy "Y" scheme, and was discharged as "Reported in Error" two days later – history does not record the nature of the error, but possibly it had something to do with the Army's superior reputation for rugby.

He applied for an engineering cadetship and transferred to the Royal Corps of Signals in April 1947. He carried out works training with the Merseyside and North Wales Electricity Board in 1949, and was shortly afterwards recalled to the colours from Class "W" Army reserve on 3 March 1949. After commissioning later that year from Mons Officer Cadet School, he was posted to 1 Training Regiment and then to 1 Commonwealth Division Signal Regiment on 16 April 1951, where he was appointed Adjutant, and was mentioned in despatches for his service in Korea. Thereafter, he was to maintain a close relationship with the British Korean War Veterans Association, and served as its President for eight years.

In 1956 he was sent to study for the Mechanical Sciences Tripos at St John's College, Cambridge. As a mature student of 29, he was deemed too old to play rugby for the University, a decision which was probably their loss. Following a tour at the School of Signals, he went to BAOR in August 1962 as Adjutant and later Radio Squadron Commander in 2 Signal Regiment. He then moved to 30 Signal Regiment at Blandford as GSO2(W) Trials, and back to Germany in 1967 to join 7 Signal Regiment and command the BRUIN squadron which introduced the system to 1 British Corps.

Appointed second in command in July 1968, he was promoted to command the regiment in January 1969, thus was establishing, in the eyes of generations of soldiers, an indissoluble bond with the Regiment. Promotion to Colonel followed and appointment in May 1971 as Colonel and

Project Manager for WAVELL. He was awarded the OBE later that year. Promotion to Brigadier in August 1973 saw him back in BAOR as Commander Corps Royal Signals. In October 1975 he was appointed Deputy Commandant of the Royal Military College of Science, still finding time to be Chairman of the Executive Committee of the Army Rugby Union. In 1976, he was awarded the CBE. On promotion to Major General in November 1979, he assumed the appointment of Chief Signal Officer BAOR, and a year later Signal Officer-in-Chief (Army). He retired from active service in June 1983, having been awarded the CB in 1982.

His retirement was to prove scarcely less busy than his service life. He became a Colonel Commandant Royal Signals in 1983, Honorary Colonel Durham ACF from 1983 to 1988, and Honorary Colonel 34 (Northern) Signal Regiment from 1988 to 1990. He became Master of Signals in November 1990. This last active phase of his relationship with the Corps saw him universally welcomed wherever he went, as everyone from the lowliest signaller upwards benefited from his interest, sympathy and understanding, qualities which his prodigious memory for names and faces allowed him to deploy to the full. Seldom has an officer been so universally liked and admired. In final retirement, fortified by the presence of his wife Sylvia, whom he had married in 1956, and his children Mark, Robin and Fiona, he kept up his interest in all sports, but specifically rugby, soccer and cricket, and enjoyed bee-keeping, gardening and walking. He died on 18 March 2009, aged 81, to the great sadness of his many friends in the Corps. Among many other memories, the key role he played in re-equipping the Corps with much needed and enhanced communications systems will figure large in his legacy.

BRIGADIER CC FAIRWEATHER CB CBE KSTJ TD JP DL

Brigadier Claude Cyril Fairweather was born in 1906, in the Edwardian Age, which marked his approach to life. He believed in living life to the full, upholding high standards in family life and work, and in public service, duty and responsibility. As a child he lived in Marton, Middlesbrough and was educated at St. Peter's School, York. He enjoyed all sports, and was skilled in boxing and football, cricket and motor cycle racing. He captained Middlesbrough Rugby and Rowing clubs, and particularly enjoyed playing golf, eventually attaining a single figure handicap. In 1928, he was commissioned into the Territorial Army and the Royal Corps of Signals, thus beginning a long and distinguished involvement with military life, in particular the TAVRA. In 1933 he became the Commanding Officer of No 2 Signal Company in Middlesbrough and was promoted to Major in 1939. When the Second World War began, he was sent to France, saw action there and in Belgium, and was one of the last men evacuated from the beaches of Dunkirk on 3rd June 1940.

In 1941 he was appointed to command 2nd Division Signals Regiment, the first Territorial officer to command a regular divisional Signals unit, and served with them in India and Burma. Promoted to Colonel in 1943, he became Chief Signals Officer to General Orde Wingate, with whom he had an excellent relationship, and organised the communications for the Chindit Expedition into occupied Burma, for which he was awarded the OBE, and subsequently enjoyed very favourable mention in a history of that operation. He was appointed Brigadier in 1945, and then CSO of the 34th Indian Corps. After the war's end, and back in the United Kingdom, he helped reform the North Riding TA, and later served on a national committee re-examining the TA organization nationwide, work for which he was appointed first as a Commander of the Order of the British Empire in 1965, and two years later as Companion of the Order of the Bath.

In 1967 he was appointed the first Honorary Colonel of 34 Signal Regiment, of which he was a very active supporter. His life in public service was as distinguished as his military career. He had attained high office in the Masonic Order, was a Knight of the Order of St John, a Governor of the Merchant Adventurers of York, a governor of St Peter's School in York and the first Chairman of the Cleveland Health Authority. He was appointed a Justice of the Peace in 1963, served as Vice Lord Lieutenant of the County of Cleveland for five years, and was the longest serving Deputy Lord Lieutenant of North Yorkshire from 1948. He died on 17 May 2003 aged 97, after a long life of service to the nation, the Army, his county and his Corps.

COLONEL RT HONE



Richard Terence (Dickie) Hone was born at Orpington, Kent on 11 March 1924, and educated at St Dunstan's College, Catford, London. He volunteered for Army Service on his 18th birthday in March 1942 and was sent to Catterick for Depot and Trade Training, qualifying as Operator (Wireless and Line) B III. Selected in 1942 for Officer Training, he was commissioned in September 1943 and posted to 9 Armoured Divisional Signals.

Seconded to the Indian Signal Corps in December 1943 he arrived at Signal Training Centre, Mhow, UP in January 1944 and was posted to 7 Indian Divisional Signals in the Arakan, Burma, as a replacement for one of the Signals officers killed in the recent Battle of the Admin Box. He remained with 7 Divisional Signals throughout the remainder of the war, followed by an eight month period in Thailand and a further period in Taiping and Ipoh in Malaya, serving as 2IC Signal Office Troop, OC Cable Troop, Adjutant and OC RA Signal Squadron. He was given a Mention in Despatches (Burma 1945) and selected for transfer to a Regular Commission. He transferred to Malaya Command Signal Regiment and repatriated to UK in May 1947.

On arrival, he was posted to the Boys Squadron Royal Signals as Wing Commander and Military Training Instructor. After the Boys Squadron moved from Catterick to form the major part of Army Apprentice School Harrogate, he was sent as PSI to 10 Air Support Signal Squadron TA at Eastleigh, Southampton. He trooped back to Malaya October 1950 on secondment to Brigade of Gurkhas to join the newly forming Gurkha Signals, and took part in raising and establishing 48, 63 and 99 Gurkha Brigade Signal Troops. He commanded 26 Gurkha Independent Brigade Signal Sqn during this period of Emergency, and was awarded the General Service Medal with Malaya Clasp.

On return to the UK in 1953 he was posted to 150 Officer Cadet Training Unit, Catterick, as Instructor, where passed the Staff College Examination and was selected to

attend Canadian Army Staff College from January to December 1957. On completion, he was posted to HQ BAOR as DAQMG, and on completion of three years of staff duty at Rheindahlen returned to Malaya in March 1961 for a second period of secondment to Brigade of Gurkhas serving as 2IC 17 Gurkha Signal Regiment. In November 1963 he was sent back to Bangkok, to join the SEATO Planning Staff for Exercise 'Air Boon Choo', returning to the UK in May 1964 to the War Office as GSO2 Signals 1a (Operations).

Promoted to Lieutenant Colonel in 1967 he went back to HQ BAOR as GS01 Signals, after which he was attached to the staff of ACDS Signals MOD as Planning Officer for Exercise 'WINTEX 70'. He was then sent to RMCS, Shrivenham with the Local Rank of Colonel. In 1972, he was confirmed in the rank of Colonel and posted to the Ministry of Defence as Colonel GS ASDI. Faced with the prospect of pushing paper for the next five years he retired in August 1974. In 1977 he joined the Danish Construction Corporation (DCC) and went to Saudi Arabia as a site manager with the Saudi DCC. In 1980 became General Manager of Gulf DCC, based in Dubai UAE. He retired in 1983 (nearing the maximum age of holding a resident permit) but continued to work for two of the three companies forming DCC on a consultancy basis well into his seventies. He died on 23 March 2010, leaving a widow, Joan, and two sons and two daughters.

COLONEL DD RANFT

David Debenham Ranft was born on 27 September 1929 at Catford, SE London. He attended St Dunstons College, Catford and All Hallows School before going on to a six month course in Mathematics and radio at Exeter University. In the meantime he had joined his school Home Guard detachment, and become a member of the Exeter University OTC. Enlisting in the ranks as soon as he was old enough, he was awarded an Emergency Commission in August 1946, and a Permanent Commission in 1947.

He qualified as a parachutist, and served in Palestine with 6 Airborne Division and with 16 Independent Parachute Brigade in Germany from 1947 to 1950, before volunteering for service with the Malayan Scouts (Special Air Service) Regiment. He was awarded the Palestine and Malaya Clasps to his Defence Medal, and returned to the United Kingdom and a series of training appointments at 6 Training Regiment and the Junior Leaders Regiment.

From January 1958 to January 1960 he attended Army Staff College, taking up his first staff appointment as GSO2 at 17 Gurkha Division. His next regimental tour was at 7 Signal Regiment, closely followed by the appointment as OC of 205 Signal Squadron. After a second staff tour at the All Arms Battle Group at the Divisional School of Infantry, he was promoted to Lieutenant Colonel and designated Chief Signal Officer to the UN Force in Cyprus.

A tour as AA&QMG at HQ North West district followed, and the appointment as Senior Instructor at the Signals Wing of the Royal School of Artillery. Selected for an attaché appointment, he was sent on promotion to Brasilia as Defence and Military Attache to Brazil in 1977, and subsequently qualified as a Military Linguist in Portuguese. An accomplished sailor, he was a qualified Coastal Skipper. David Ranft was rated as an excellent all-round officer, who did much to enhance the reputation of the Corps, and his death on 8 November 2007 was much mourned by his many friends in the Corps.

COLONEL KG TAYLOR TD ISO



Ken Taylor joined the Royal Corps of Signals (TA) in 1938 at the age of 18. He trained as a dispatch rider, as he already owned a motorcycle. His pay was 1/-per day, plus 2/-per day for the use of his own bike. He was subsequently commissioned in September 1940 after training at the Aldershot OCS under the famous RSM Brittan. He was subsequently posted to India to join the Indian Army as a Signals Officer, and found himself based at the border town of Kohima, just when the Japanese forces were pressing their advance.

At this time, Orde Wingate was leading an operation to establish strong points behind the Japanese lines in order to disrupt their advance towards Imphal and Kohima, from where they were intending to invade India. These strong points were supplied by air, and twelve thousand men were dispatched in gliders towed by Dakotas over mountain ranges reaching up to 7000 feet. The landing sites identified as suitable for the construction of airfields were extremely hazardous, being located in a mountainous area covered in jungle. The landing sites went under code names of 'Broadway' and 'White City'. Thirty seven gliders landed at Broadway, but sixteen did not, including the one carrying the Signal Officer in charge of the ciphers, which meant that the force could not communicate.

As Signal Officer in reserve, Taylor was ordered to fly in to Broadway with new code books. The OC of the loca-

tion Brig Mike Calvert, decided that they had to get to the location codenamed White City to assist the troops who had cut the railway, and were under attack from the Japanese. This was a trek through dense jungle for 45 miles, in line ahead, one man in front with a panga, and one behind with a compass. Having arrived at the site and assisted in the battle, the original carrier of the codes turned up, having marched through the jungle for many days, until he reached a British unit who brought him in. Taylor was thus released to return to his own unit.

From White City, he hoped to get a flight out, but the severely wounded had priority, so he was put in charge of a party of walking wounded, to escort them back 45 miles through the jungle, knowing that there were Japanese troops all around. It was with great relief that they returned to the base at Broadway, and eventually to India. On a lighter note, on an internal flight in India, Ken and some colleagues shared a Dakota with Gracie Fields' wardrobe, including her grand piano. During the flight there was a lot of turbulence, the piano broke loose from its lashings and they had to hold it down for the rest of the flight.

After completing his war service in 1946, he joined the Army Emergency Reserve in 1950, serving until 1968, reaching the rank of Colonel as CO of 82 Signal Regiment (AER). After his retirement he joined the Sheffield Branch of the Royal Signals Association, and was appointed Vice President. Here, he and his wife Kay were to prove enthusiastic and popular supporters of all Branch activities. He had become an accomplished silversmith, and he would bring examples of his work to Branch meetings, where they were much admired. The two were regular attendees at RSA reunions in Blandford, as well as the annual Governor's Parade at the Royal Hospital Chelsea, where they made many friends among the Pensioners. Ken Taylor was liked and admired by all who knew him as a true gentleman, who will be much missed by his many friends in the retired community.

BRIGADIER CE TONRY OBE



Compiled with the help of memories supplied by Brigadier NA Butler.

Clive Edward Tonry was born on 11 November 1920 and educated at King Edward's School in Birmingham. He enlisted in the TA at the age of 18 in 1938 and was eventually commissioned in 1944. Meanwhile he saw active service with the BEF in 1940, and his close-run escape with his comrades through enemy lines was later featured in a BBC docudrama about Dunkirk in which he participated as a commentator. He later served with 11 Armoured Division Signal Regiment in Normandy, following which he was awarded the Croix de Guerre with Silver Star.

After World War II he served in Palestine with 6 Airborne Signal Regiment, and then in UK and BAOR with 16 Independent Parachute Signal Squadron. After Staff College in 1951, he became MA to the Head of British Services in Rangoon, and was appointed Naval and Military Attache at the Embassy on acting promotion to Lieutenant Colonel in 1954. Postings to Catterick, BAOR and MOD followed before substantive promotion and being selected to command 8 Signal Regiment in from 1963 to 1965.

Having qualified as an interpreter in Bulgarian, he was posted to the Embassy in Sofia as Defence Attache from 1965 to 1967, and was awarded the OBE in the Queen's Birthday Honours List of 1966. On promotion to Colonel, he became CR Signals Singapore and Commander 5 Signal Group in 1967. On his return to UK he was appointed Colonel (Operations and Staff Duties) in the Signals Directorate in the Ministry of Defence before taking up his final appointment as BGS (Signals) from 1970 to 1972.

Clive Tonry was possessed of a cheerful disposition and great enthusiasm and energy. He was keen on all forms of sport, and was particularly competent at squash at which he was awarded his Corps Colours at the age of 51, much to his pleasure. He also competed regimentally at athlet-

ics, cross-country, rugby, soccer, swimming, diving, water polo, tennis, skiing and ice hockey.

On leaving the Army, he became a teacher and Bursar at Dumpton Boys Preparatory School in Wimborne, Dorset, where he completed many happy years before his final retirement. He died on 25 December 2010, to the regret of all who had known him. His wife Dorothy pre-deceased him.

