INSTITUTION OF ROYAL ENGINEERS

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Institution Affairs
Secretary's Update

OVER the last few months, under the direction of the Council, I and a small team visited units in Germany and the United Kingdom to brief Senior and Junior Non Commissioned Officers on the benefits of joining the Institution. The response was very interesting. Amongst many other things, it was evident that new young members want far more from an Institution than we are currently providing. It was also made very clear to me that grades of membership that are dependent on rank rather than qualification or ability are not particularly welcome. A strong case was also made for the Institution to become a qualifying body capable of presenting the "Military Engineer" capabilities to the Engineering Council (UK) and to the wider engineering Institutions. The results of the visits will be presented to the next Council meeting and I hope to be in a position to update you in the next *Journal*.

In the last few weeks we presented our case to the Engineering Council (UK) for the renewal of our Professional Affiliate membership. I am delighted to say that this was granted for a further five years. We also retain our seat on the Engineering Council (UK) Professional Development (PD) forum and actually hosted the last meeting of the forum at Chatham in October. This was a great success, with many of the other Institutions' representatives leaving Chatham with the knowledge that our soldiers are receiving first class training at the RSME. There is no doubt that PD is uppermost in the majority of Institutions' thinking and our Council will also address this shortly.

In the new issue of the *RE List* there have been minor changes with the grouping of Associate Members across all disciplines. In the New Year we intend to run a trial of sending the Supplement as an email attachment to a selective group who have registered, rather than posting a hard copy. Please look for and return the application form to register if you would like to take part in this trial.

The digitization project runs on, thanks to a very generous grant of £20k from General Dynamics. By spring next year all previous *Journals* (circa 550), and eleven volumes of Corps History will be available on CD/DVD as fully searchable documents. In addition we will shortly be selecting specific small projects within the library to try to bring our "Treasures" more into the public domain. There is much to do and all of it requires funding and time. If you feel you can help either financially or with a specific expertise please contact me.

Finally to all our members world wide, have a pleasant Christmas and a safe and peaceful New Year.

Guidelines for Authors

The Editor is always pleased to consider articles for publication in the *Journal*.

Subject. Articles should have some military engineering connection but this can be fairly tenuous, especially if an article is well written and interesting.

Length. Articles of any length are considered but should normally be between 1500 to 5000 words. About 1200 words covers one page less photographs.

Copy. One copy of the text should be submitted, together with a head and shoulders photograph of the author plus a short pen picture and any other illustrations.

Clearance. Articles must be cleared by an author's CO where applicable.

Copyright. If an article has been published elsewhere, copyright clearance must be sought by the author before submission. Where necessary copyright clearance on photographs, maps or illustrations must also be obtained prior to submission.

Photographs should, if possible, be of good quality with sharp definition, and have appropriate captions. Files from digital cameras can be used providing they are taken with a camera capable of producing high quality images. The files should not be altered in any way prior to submission and they MUST NOT be embedded in the document. Digital images can be sent via email to assist.sec@inst-royal-engrs.co.uk or on a CD.

Rewards can be generous. The publications committee has about £350 in prize money for each issue plus valuable annual prizes. All authors receive £20 to help cover costs.

Pseudonyms will not be revealed by the Editor under any circumstances.

Contributions should reach the Editor by:

11 February for the April 2005 issue.
10 June for the August 2005 issue.

Submissions before the deadline are particularly welcome.

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Engineer in Chief's Annual Report to the Corps

Introduction

THIS year's report is dominated by the Corps' contribution to operations. Op *Telic* remains our main commitment but we also have soldiers on operations in Afghanistan, the Balkans, Sierra Leone, Northern Ireland and on the UK mainland. The reputation of the Corps is gained on these operations and probably stands as high now as it has ever been.

Following SDR, we are now well into planning another reorganization under the banner "Future Army Structures" (FAS). This will result in some significant structural changes for the Corps that reflect the need for an Army that is more expeditionary in nature, easier and faster to deploy whilst still being able to deliver a sizeable punch. It is gratifying to note the role of the Corps in support of Defence has been recognised and at a time when many other parts of the Army are facing a reduction in strength, we are gaining much needed capability.

Of course FAS is only one piece of work that will affect us all in the future. Add to this Whole Fleet Management, Digitization, the Defence Training Review, Command Leadership and Management, Review of Officer Career Courses and the Non Commissioned Engagement and Career Structure Study, and it becomes evident just how important it is to be able to cope with the never ending stream of change. My Headquarters has restructured in order to influence these and additional initiatives more effectively, and I remain confident that we are heading in the right direction both from an "individual" and a "collective" perspective. I am concerned by the undermanning across the Corps, which I know is most acutely felt in our Regiments and Squadrons. This is a result of expansion, not recruiting difficulties, and whilst it will take time to resolve I am confident that we continue to move in the right direction.

Organization

FAS WORK has dominated the year as HQ EinC(A) has continued to develop the future shape of the Corps, with the support of many from headquarters and units. The reduction of four infantry battalions is providing the headroom to enable much of the change, although many other capbadges are reducing in size too. The process of allocating FAS liability across the Army is nearing completion, with announcements expected over the Christmas period. My arguments throughout have been based on the Corps' operational success. Recent operational experience has shown that Sappers make up between 14 and 24 per cent of any deployed force and, unlike many other capbadges, the Corps will justifiably grow under the FAS process. The order in which units will transition to FAS establishments will be dictated by a number of variables including the operational requirement, the ability to recruit for and man the new posts, and the long term basing plot. The detailed implementation of FAS reorganization will be carried out under the direction of HQ LAND. Initial plans see this happening from April 2005 until late in 2008.

Initially a new squadron, 17 Fd Sqn (EOD), will be added to 33 Engr Regt (EOD) to meet the high operational demands in the permanently committed forces role (PCF). The mech bde close support regts will each gain an extra armd sqn; 52 Armd Engr Sqn in 22 Engr Regt and 27 Armd Engr Sqn in 26 Engr Regt. 38 Engr Regt will re-role as a wheeled Fd Regt to provide close support to 19 Lt Bde. A major improvement to the capability of the Corps will be the addition of 24 Cdo Engr Regt in the close support role for 3 Cdo Bde. The last major change will be the raising of another Air Sp RHQ and a reorganization of the existing Fd Sqns (Air Sp) into two Regts. 39 Engr Regt will continue to provide military engineer support to the RAF and the new 25 Engr Regt will provide military engineer support to the Joint Helicopter Command when no longer required in Northern Ireland.

The RE TA will see significant change to internal structures and establishments as it adapts to deliver support to the RE FAS structures. FAS will see the RE TA more closely integrated with the regular units of the Corps and greater purpose will be provided to training as each RE TA unit will be focussing on providing a specific capability to the regular Corps. FAS will result in a positive and challenging new direction for RE TA units. The end result will reinforce my belief that the TA is very much a "TA for use".

Simultaneously this year, HQ RE Theatre Troops and HQ EinC(A) have both reorganized. CRE Theatre Troops works to his GOC, in the same way as the divisional CREs, rather than HQ LAND. However, he does retain oversight across the Field Army in his role as Joint Force Engineer. A number of name changes are being introduced in recognition of this change, with RE Theatre Troops becoming 8 Force Engineer Brigade commanding 12 (Air Sp) Engr Gp, 29 (Land Sp) Engr Gp and 170 (Infra Sp) Engr Gp (formally MWF).

My headquarters has taken on many functions previously sitting with RE Th Tps, including the MES and sustainability staffs. HQ EinC(A) has thus restructured into three pillars: The Regt Col continuing with his current role; my COS remains my deputy and leads on structures, training, and people lines of development; and Col Capability Development (CD). Col CD develops the former Engr 2 to lead on concepts, equipment and sustainability lines of development.

Undermanning continues to be a major concern. It is likely that the Corps will have to bear a degree of undermanning as our liability increases over the next few years. A number of trades have been designated as Operational Pinch Points (OPP) by Director Manning (Army) (DM (A)) and additional recruiting resources are now being directed toward these trades.

The number of personnel misemployed in the interests of the Corps remains at a necessarily high level. This is the result of the introduction of new equipment such as TITAN and TROJAN while running older systems on and the need to bolster both the recruiting and training organisations to meet the demands of FAS increases.

Operations

Overview. Operationally the year has once again been dominated by the situation in Iraq with a CS Engr Regt, Wks

Gp (-), Fd Sp Sqn and EOD Tp permanently committed. Elsewhere, there has been a drawdown in the number and scale of standing commitments and a shift towards surging capability for directed tasks, specifically in the Balkans and Afghanistan. The result has been an overall improvement in the Tour Interval for units, reflected in the Land Commitments Tour Interval Plot, which shows an average of 25 months between operational tours. This does, however, mask the significant pressure that has remained on Military Works Force (MWF) and EOD Operational Pinch Points (OPP). Key over the forthcoming year will be the effective management of current commitments and, in particular, OPP in order to ensure that the Corps is appropriately balanced to meet emerging and unexpected commitments.

JRRF Roster. The Corps has continued to provide combat engineer, EOD and infrastructure (MWF) support to both the Spearhead Lead Element (SLE) and Airborne Task Force (ABTF). 12 (AS) Bde has provided the Lead Air Support Squadron (LASS) in support of the RAF. The Lead Recce, Mechanised and Armoured Task Forces have not yet been reconstituted due to ongoing operational commitments.

Great Britain. On 16 Jun the Fire Brigade Union backed a motion to hold a ballot for large-scale industrial action and for several months it appeared that Op *Fresco* (MACA to cover Fire Service Strikes) would, as in 2003, have a major impact on the year. Preparations involving 23, 35, 36 and 38 Engr Regts were well developed when the Office of the Deputy Prime Minister formally announced on the 27 Aug that the Armed Forces could stand down. In addition to Op *Fresco*, 33 Engr Regt has once again been involved in a range of MACA tasks including searches for the Party Spring and Autumn conferences, MOD Main Building, Scottish Parliament and Leeds Castle for the Anglo Irish Talks. The Regt also provided a RESA and REST at short notice to search Boscastle harbour following the flooding of Boscastle on 18 Aug.

Northern Ireland. There has been a marked decrease in terrorist activity over the past year and the marching season once again passed off with few incidents. The consequent reduction in public order work has resulted in the Roulement Engineer Squadron (RES), less its Search Troop, becoming increasingly rear based. Significant search work has remained and necessitated the forward basing of the Search Troop. The political future of Northern Ireland remains uncertain and much hinges on the signing of the Joint Declaration. However, readjustment of military forces ["optimisation"] is occurring across the Command and 25 Engr Regt is continuing to consider options to reduce the impact on the wider Army by setting the conditions for the release of the RES.

Iraq. The Corps' commitment to Peace Enforcement operations in Iraq has remained at Medium Scale with Sappers continuing to deliver a broad range of military engineer support across MND(SE), including life support, force protection and EOD. Significant effect has been achieved in the development of Essential Services. At the tactical level the CS Engr Regt is fully engaged, offering technical and project management advice to the Director Generals as well as providing Power Support Teams, who play a pivotal part in facilitating repairs to the power. The following have been committed to Iraq:

- Op *Telic 3* – 35 Engr Regt (incl 2 x TA Tps), 62 Wks Gp (-), 45 Fd Sp Sqn and a Tp from 21 Fd Sqn (EOD).
- Op *Telic 4* – 22 Engr Regt (incl 1 x TA Tp), 63 Wks Gp (-), 61 Fd Sp Sqn (Air Asslt) and a Tp from 21 Fd Sqn (EOD). 69 Gurkha Fd Sqn provided surge manpower for three months between Jul – Oct to support force protection work.
- Op *Telic 5* – 21 Engr Regt, 63 Wks Gp (-), 65 Fd Sp Sqn and a Tp from 49 Fd Sqn (EOD).
- Elements of the LASS, 53 Fd Sqn (AS), and 529 STRE (Wks) deployed to repair the runway at Basrah International Airport.
- In addition to their standing commitment, Military Works Force have been involved in: the construction of a Tier 1 Field Hospital; borehole management at Shaibah Logistic Base; and design of a Bulk Fuel Installation and Kerbside Refuelling Facility, also at Shaibah Logistic Base

Afghanistan. The standing commitment in Afghanistan has been limited to three x Clk of Wks deployed: One with the ARIB; one with the Provincial Reconstruction Team (PRT); and one on other tasks. There have also been a number of additional deployments:

- 42 Fd Sqn and STRE deployed to Mazar e Sharif on 10 May to construct a 250 man ITC and improve the infrastructure for the PRT. More recently, MWF has designed a new Tier 2 facility, which should be constructed in the New Year.
- In Sep, elements of 53 Fd Sqn (AS), the LASS, and 529 STRE (Wks) deployed to Kandahar International Airport to establish it as a HARRIER GR7 Deployed Operating Base.
- The rear based five man EOD team has deployed to clear sites in support of construction works in Mazar e Sharif and Kabul.

Bosnia. The situation is Bosnia has remained stable and as part of the continued drawdown of troops across the Balkans 31 Armd Engr Sqn and the EOD detachment withdrew from Bosnia on 21 Mar 04 and the IEDD team followed in mid May. The pan-Balkan STRE has drawn down to a CEng PROM and Clk of Wks DPROM supporting MNTF (NW). Despite the drawdown, limited military engineer tasking has continued with 33 Engr Regt (EOD) providing advance search support to a number of Op *Harvest* tasks and elements of both 516 and 517 STRE (BP) deploying to support base closures and the decommissioning of fuel installations.

Kosovo. The sole standing RE commitment within Kosovo was a Clk of Wks DPROM, who was withdrawn in early Nov. As with Bosnia the Corps has continued to deploy forward as required to support specific operations. The most significant of these was in Mar when the SLE deployed at very short notice to support KFOR in its response to an unexpected and rapid increase in tension between ethnic groups. 1 RGBW, the SLE Battalion, was supported by elements of 51 Fd Sqn and 33 Engr Regt for the operation.

Cyprus. The small RE maintenance team continues to provide support to UNFICYP. Following the unsuccessful referendum on the Annan Plan and Cyprus' EU accession the UNCSR commissioned a review on UNFICYP, which recommended a 30 per cent reduction in the force by Mar/Apr 05. The impact this will have on the maintenance team is unknown.

Falklands Islands. The requirement to provide the Falkland Islands RE Maintenance Team continues. The scale and nature of the capability was reviewed by 12 (AS) Bde in May, which led to a reduction in the team to 11 tradesmen and, in order to ensure continuity and expertise, 39 Engr Regt taking on responsibility for the provision of the core of the team.

Sierra Leone. The UK led IMATT continues with seven

Sappers involved in the provision of training to the Royal Sierra Leone Armed Forces.

Geographic Support. 42 Engineer Regiment (Geographic), has continued to support Op *Telic* with a Geographic Troop located in Basra International Airport. The troop has been augmented for much of the past year by members of the New Zealand geographic community, a most successful of relationships. Numerous tasks have been completed allowing GEG personnel to be employed across the operational environment spectrum, particularly in support of infrastructure operations. Pan-Balkan support continues with the emphasis being upon Kosovo. Geographic support to the Multi-National HQ in Banja Luka has now been withdrawn. In response to the impending transition of NATO to EU Forces, the post of Chief Geographic Officer is now filled by UK personnel for a period of 12 months. Support to operations in Northern Ireland has remained consistent across the province, with increased cooperation with the various governmental departments.

Reserve Forces and the TA

Deployment on Operation *Telic* has continued with two field troops (from 73 and 75 Engr Regts (V)) being provided to 35 Engr Regt and one field troop (from 71 Engr Regt (V)) being provided to 22 Engr Regt. Operation *Midway* has been supported throughout 2004 by 101 Engr Regt (V). The RE TA continues to support Op *Telic 5* by providing the Operation *Midway* Troop to 33 Engr Regt (EOD) and a number of Military Works Force (V) personnel are embedded in the regular STREs. In addition, a number of RE TA officers fill specialist and E2 posts.

A fluctuating figure of approx 30 personnel continue to volunteer for deployments in the Balkans and Afghanistan. Involvement ranges from the provision of NCOs for Tiger teams to specialist officers engaged in infrastructure re-development. Many RE TA soldiers have now completed 12 months mobilized service within the last three years. This means that, for many, no further mobilised service can be undertaken until early 2006.

RE TA units now have a wealth of operational experience within their ranks. Attention has now turned to exploiting that experience and incorporating lessons learned into training – the RE TA method of employing TA soldiers as instructors in their units lends itself well to that process. Emphasis is being placed on individual training so that there is effective regeneration for the future. The range of individual training ranges from CMS(R) for recruits up to Class 1 employment and command training. The RE TA officer training plan is now being implemented and has been amended to take into account the demands of ROCC(V) and JOTAC.

Financial constraints have curtailed some overseas exercises and units have consequently had to provide alternative annual camps. Units have undertaken a number of Individual Course Training Camps and FTXs in 2004 as follows:

HQ RE TA – centrally conducted Courses Camp at Ripon.
RMon RE(M) – Regimental FTX.
71 Engr Regt – Ex *Flying Rose* (America) and sub-unit training.
73 Engr Regt – Individual training camp.
75 Engr Regt – Regimental training camp.
101 Engr Regt (EOD) – EOD concentration.
MWF(V) & JT CIMIC – Military Skills camp.
131 Indep Cdo Sqn RE – Squadron training camp.
135 Indep Geo Sqn RE – Individual Training camp.
412 Amph Tp (23 Amph Engr Sqn) – Individual Training camp.

The Engineer and Logistic Staff Corps RE(V) have continued to provide the Corps with expert advice often at no notice. This year they have provided operational support to the Royal Signals in UK and to the Corps in Iraq, as well as a wide range of support to training and policy.

Engineer Logistics

Whilst my report last year stressed how demanding and successful the Corps logistic effort was in supplying and sustaining Op *Telic*, Afghanistan, the Balkans, Northern Ireland, Cyprus and the Oman and a number of other UK commitments, the logistic momentum has not slackened. During Op *Telic* it was the visibility of material in the supply chain and asset tracking in theatre that posed the major challenges. Post war fighting there was a major push to get both men and engineer equipment out of theatre, to drawdown to steady state.

The two major challenges this year have been the account reconciliation and closure for the Op *Telic* enabling Fd Sp Sqn, and the consolidation and auditing of the 6000 beds' worth of expeditionary camp infrastructure (ECI). These camps contain over 3000 individual items and, as each camp is valued at up to £11m, must be effectively managed

The Resources Specialist trade has proved its worth on recent expeditionary operations. FAS has recognized this, with many new posts being established and decadreisation in all Fd Sp Sqns. The trade now offers continual personnel development for its practitioners from National Vocational Qualifications level 2 at Sapper up to a BSc (Hons) in Supply Chain Management and MSc (Logistics) for warrant officers and officers. We are working to directly recruit resource specialists into the Corps from 2006, with process based training for the trade being developed at the Defence School of Logistics. Training will also dovetail into a new quality management system being developed to efficiently deliver our design, resource, construct process. The proposed Royal Engineers Quality Management System (RE QMS) will greatly assist us in ensuring that the Corps does get the right equipment and material to the right place, at the right time.

Military Engineer Services

The Chartered Engineers, Garrison Engineers, Clerks of Works and Military Plant Foremen that make up what is known as the Military Engineer Services (or MES) part of the Corps are recognized more and more across Defence as force multipliers and as some of our key enablers. As the Corps' focus switches to expeditionary operations infrastructure, which has in the past been seen by some as a specialist area, is now very much a part of the Corps' mainstream business. Consequently, not only have I moved the MES staff focus from Wilton to Minley, I have also broken it up and fully integrated the various constituent parts into my Headquarters.

Across the technical rosters undermanning continues at about 10 per cent. It is most severe amongst the Clerks of Works, where recruiting enough JNCOs of the right calibre to pass the courses at the appropriate standard, particularly for the Clerk of

Works (Construction), remains a challenge. Recruiting for all the long technical courses, and for the design and technical trades that largely feed them, remains a priority.

The implementation of Project ALEXANDER within Defence Estates (DE) continues to impact on members of the Corps. DE has set up three Operations directorates; a new RE CEng Brigadier has been appointed to lead one of them. The DE Overseas Business Unit has now taken over the delivery of peacetime infrastructure in all the overseas stations outside northern Europe. It is headed by a CEng Colonel with 56 Royal Engineers under command in 10 countries on five continents. In a final stage of Project ALEXANDER, DE are reviewing Wks Gp RE (Airfields)' peacetime role. My staff are involved to ensure that the unit's ability to provide deployed operational infrastructure support the RAF is not reduced.

I have directed study work on the wider continued professional development of our officers and soldiers. The aim is to gain greater recognition of our military engineering expertise, knowledge and formal military and civilian qualifications. Potentially this could be achieved by the development of schemes in Military Engineering to satisfy Engineering Council (United Kingdom) UK-SPEC awards at Eng Tech, IEng and CEng for many JNCOs and above. A network of mentors would be required Corps wide to support individuals with a central staff co-ordinating standards, reviews and qualifications.

The breadth of the Corps' operational infrastructure capability was captured in a Special Edition of the ICE's glossy journal Civil Engineering published in May. Members of the Corps wrote all 10 papers and some 60,000 copies were distributed to a wide civilian and defence audience.

Although the Works Inspectorate posts were cut under the LANDmark study on 31 Mar 04, as the Inspector of RE Works I have retained the SO1 post in my headquarters and he is to be called SO1 Standards. The title has been changed to reflect the wider health and safety and construction standards that are central to works inspection activities and to provide a Corps focus for construction health and safety. With the reduction in manpower of the Works Inspectorate, a number of authorising engineer and contract delegation audit duties transferred to DE OBU on 1 April 2004. The remainder were retained in the Field Army at MWF and 12 (Air Sp) Engr Gp.

The cancellation of many of the engineer construction Overseas Training Exercises has enabled the Works Inspectorate to direct its activity towards the provision of management advice to construction supervision cells both in barracks and on operations. They have also undertaken Post Project Evaluations of the Basrah Temporary Field Accommodation and Baghdad Support Unit projects on Op *Telic*.

Royal Engineers (Geographic)

THE Geographic Engineer Group (GEG) has had another demanding yet successful year providing field deployable geographic support to Defence. The GEG has supported operations in 10 countries and has also made significant advances in the development of capability and in Defence training.

In addition to operational commitments already covered, the GEG has supported a number of major overseas exercises, which included Exercise *Trig Med* in support of HQ British Forces Cyprus, Exercise *Dhowes Marker* in Gibraltar and participation in a Brigade size Engineer concentration in France with 28th Groupe Geographique. The ARRC Geo exercise, *Arrcade Globe*, hosted by 14 Geographic Squadron in Germany, included participation from Italy, Germany, Spain, the Netherlands, France, the United States, Hungary and Poland.

The development of capability has been particularly challenging as much of the GEG equipment programme has been transferred during the year to a dual-accountable Integrated Project Team within the DPA, bringing procurement and support arrangements into closer alignment with the remainder of Defence. The benefit of this is that our two primary systems, TACISYS and DGS (L) should become increasingly more integrated with Defence C3I systems. The existing range of IT and reprographic equipment is due to be maintained up to 2008, at which time we expect a major technology insertion programme aiming to integrate, in a net-centric manner, the deployed and home based DGIA units. As an early enabler for this, the GEG is about to take ownership one of only five Pilot Digital Broadcast Systems available to UK Defence to provide an independent broad band data link from the UK to theatre which is managed over a secure mobile JOCS link.

The GEG has made excellent progress in its development of Doctrine, the most notable of which was the acceptance and publication of the first Royal Engineers Pamphlet (RE Pam) – Volume XXIV "Field Geographic Support". The pamphlet was successfully published for inclusion in the British Army 2004 Electronic Battle Box and it defines the full spectrum of deployable geographic support to operations and how it should be delivered in line with the Future Land Operating Concept (FLOC).

Development of RSMS training has been a particularly challenging arena over the last year. The Foundation Degree in Applied Computing (Defence Geographic Information), accredited through Sheffield Hallam University, is now well established with 83 soldiers registered, the first cohort of 26 graduating in March next year at Hermitage. The Army Survey Course successfully passed its MSc Periodic Review by Cranfield University this year. The course continues to attract attendance from overseas with students on the outgoing course from USA, Bangladesh, Estonia, Korea and Ukraine and on the new course, from Canada, USA, Malaysia, Korea and China. Officers and soldiers also continue to attend external universities with personnel in the current year undertaking MSc and BSc studies at Sheffield and Greenwich Universities respectively. During the past year RSMS has introduced of a new range of Defence GIS courses with an advanced course programmed for next year. The year has also seen an increased commitment to the delivery of the Geo component of the Application Specialist course in support of the BOWMAN programme.

Recruiting, Manning and Career Management

Recruiting. The success of the special recruiters and the Corps Regional Recruiting Teams (RRT) has been recognized; both will continue during the FAS ramp-up. The Corps still has difficulty recruiting the technical trades. Several measures have been introduced to try and alleviate the situation, including focussing effort on technical colleges, introducing an RRT into Scotland and teaming up with other technical arms/services to increase coverage of events.

Direct Entry Officers.

Career Stage 1. ROCC transition continues apace and whilst the JOLP and MA courses have been well received, the introduction of MK1 and 2 will continue to provide challenges for both candidates and the chain of command. With the start of ICSC(L) there will be a strong drive for senior captains to migrate towards a summer movement plot.

Career Stage 2. The current strength of the DE majors' community is 304. With a Corps liability of 282 majors posts (RD, Grade 2 and EOSB) it is reassuring that only two E1 posts have been consistently gapped and the PVR rate for the last 12 months was only 4.6 per cent. ICSC(L) 1 started on 20 Sep 04 and its graduates will fill initial grade 2 appointments in summer 05. All Beige List 05 promotees will attend ICSC(L) 2 and the course will be about 400 strong. ACSC 9 (the last "old style" advanced staff course) also started this year and its graduates will fill the last of the Black Bag jobs in 2006. Some Black Bag jobs have already been released as initial SO2 appointments and the remainder are likely to be classed as subsequent grade 2 posts. By summer 2005 the entire majors' community will be on a summer rotation timetable.

Group B Rules. I believe it is important that we give RE Specialist Officers (SO) the widest possible employability and allow RE MCM greater flexibility in manning the Corps. I also recognize that many SOs want to be more closely aligned to mainstream counterparts in order to exploit other career opportunities. Thus Group B Rules are being amended to enable SOs more looks at Group A Rules promotion on the Pink List.

Late Entry (LE) Officers. I continue to commission about 25 WO1s each year into the Corps. The present LE strength stands at 299 and this reflect an overall increase to the LE community of 23 per cent within the last five years. LE PVR rates remain within the planned norm. With the pending implementation of FAS we can expect a further increase in the LE strength. The implementation of the Harmonised Soldiers Year in 2005 will result in two Arms Selection Boards to commission WO1s in 2005. The first taking place in Jan/Feb 05 to cover the commissioning period 1 Apr 05 to 31 Mar 06 and secondly Oct/Nov 05 covering the period 1 Apr 06 – 31 Mar 07. Thereafter, all future Arms Selection Boards will take place in Oct/Nov of each year.

Soldier Manning. DM(A)'s in-year restrictions and initiatives such as early voluntary release and the restriction on re-joins have had a slight impact on the strength of the Corps, which shows a very marginal fall in trained soldier manning since April. Despite this, the total strength of the Corps has risen to just over 9250 (incl trainees, SATTs and trained soldiers). The PVR/notice to terminate rate has risen from 6.3 per cent last year to a predicted 7 per cent by end 2004. With the onset of FAS it is hoped that the RE will become exempt from the current restrictions as they could seriously hamper our attempts to man the increased liability.

Trained Soldier Strength Oct 04 (Apr): 7400 (7434)
Total Soldier Strength Oct 04 (Apr): 9263(9197)

The LCpl population is falling and is still out of balance. This year's selections show a marked fall in Cbt/Artisan nominations and it is in this area where the problem is most acute: the Corps needs more LCpls in this roster now! Contrary to this, there are still too many ME POM and ME Driver LCpls, although these numbers are slowly levelling out.

Non Commissioned Engagement and Careers Study (NECSt). Initial work to identify which Career Employment Groups (CEQ) might be suitable for extended engagements has been completed. The Corps response recommended that only Clerks of Works CEQs should be considered further, and that this should be based on extended service up to only 27 years service. No decision has been taken yet and further work will almost certainly be required to confirm initial assessments once further details of the proposed versatile engagement (VENG) are made available.

Manning Restrictions. Due to DM(A)'s funding concerns, Col REMCM no longer has a free hand with the granting of continuance but continues to fight those cases where there is an operational requirement. Each case comes under considerable scrutiny and, although soldiers may be invited by REMCM to apply, they cannot assume that continuance will be granted. There is still a restriction on soldiers re-joining the Corps in all trades other than designated Operational Pinch Points. A new Re-Join Bounty letter, with 170 sent to those discharged in the last few years, has targeted OPP tradesmen. £6000 is available to successful applicants.

Soldier Career Management. The combination of having RCMOs in place and the Annual Career Review process conducted in Glasgow is helping to ensure that our soldiers are receiving the best possible career advice. I am pleased to note that this will be further enhanced from April 2006 with the introduction of a formal career review report for soldiers reaching their 7th and 14th year of service. From next year we will move towards a common Army harmonised soldier MS year that will further improve internal APC processes and the service provided to our soldiers. Of concern is the increasing number of our soldiers that are being medically downgraded. 14 per cent of our soldiers are now low medical category and the trend shows that this figure is increasing.

Soldier Promotion. As we are now close to achieving our full SDR manning (in ranks above LCpl) the overall volume of promotions decreased by 13.6 per cent to 1148 this year. The total promotion figures are still 126 per cent higher than in pre-SDR years and this combined with increased employment opportunities is good news for the Corps. The new FAS establishment will clearly offer greater opportunity for all.

Individual Training

THE need for multi-skilled soldiers with soldier, combat engineering and trade skills is essential for operational flexibility, and I am encouraged that our policy of multi-skilling continues to be endorsed by operational commanders. However there remain many who wish to see a reduction in the cost of RE training, especially trade training delivered at Phase 2. We continue to defend necessary training required to deliver operational capability, but also regularly examine training needs to ensure that it is directly linked to operational requirements and that its delivery is effective, efficient and affordable.

Phase 2 training output remains the priority for ATRA Schools. RE output (forecast at 1062 against a Statement of Training Requirements (SOTR) of 1054 for TY 04/05) cont

inues to remain healthy but overall success masks shortfalls in trades where ATRA has been unable to generate sufficient recruit numbers to fill SOTR requirements.

RSME has run additional courses to help to clear the backlog of Soldiers Awaiting Trade Training (SATT) and SATT numbers will have fallen from a peak of around 633 in Dec 03 to around 250 by Dec 04. This reduction in SATT numbers has been enabled by provision of additional military instructors from the Field Army. ATRA has also imposed Project Straight through as a "just in time" process for restricting SATT numbers in the ATRA pipeline, but there are clear signs that this is leading to gaps in the loading of Phase 1 courses which have unacceptable impacts on future Phase 2 outputs. This issue is being discussed between HQ ATRA and RSME.

Continuing high levels of operational commitment have restricted take up of training vacancies on some Phase 3 courses but, not surprisingly, those critical to career advancement (including command courses) are well subscribed. Courses where specialist qualifications are obtained (for example Dvr Spec ABLE/TBT and armoured engineer courses) have been less well attended. Efforts have continued to ensure that the chain of command nominates students to fill vacancies on these courses. Where justifiable SOTR requirements will be reduced.

RETDT provides the expertise and analytical capability to review RE training requirements through application of Defence Systems Approach to Training (DSAT). External Validation of Training and Training Needs studies carried out by RETDT on my behalf ensure effective and efficient training is delivered. RETDT studies require full engagement and co-operation from both units and the chain of command if appropriate conclusions and recommendations are to be delivered. RETDT has been particularly busy over the past year. The following provides examples of the wide range of activity undertaken:

- Job Analysis of the Resources Specialists requirement, which has led to agreement that the Corps will begin recruiting directly into this CEQ from Phase 2 (wef Apr 2006).
- External Validation of ME(Elec), ME(Des Dtmn), ME(Dtmn(E&M)), ME(Ftr ACR) courses.
- A review of the training required to support Mitigation (for 33 Engr Regt (EOD))
- An assessment of the training required to support Air Manoeuvre has been conducted (for 23 Engr Regt).
- An Analysis of All Arms Search requirements.
- A Review of the likely impacts of BOWMAN/Digitisation on RSME Courses.
- Support to Training Needs Analysis for a wide range of equipment procurement projects including Air Portable Ferry Bridge and TSB Pontoon, EOD Rifle, TERRIER, C Vehicle PFI and other programmes.

The responsibility for the RSME PPP Business Case has been passed from HQ RSME to HQ ATRA with the formation of an RSME PPP IPT within HQ ATRA in Feb 04. Progress has been held back by the need to resolve a number of issues including the balance sheet treatment and the affordability of the programme. The Business Case is now expected to be presented to the Investment Appraisals Board (IAB) for a Main Gate decision by Easter 2005. If Main Gate approval is granted there will be a further short period of contract negotiation with the preferred bidder (HOLDFAST) prior to the signing and implementation of the contract.

The process of rationalisation of those areas of training covered by the Defence Training Review (DTR) has proceeded apace, with the formation of "Federated" Defence Training Establishments (DTEs) having taken place on 1 Apr 04. This has placed existing schools, which remain in their current locations, under the command and budgetary control of their DTEs. For the Corps this has meant that National Search Centre (NSC) and Defence EOD School (DEODS) are now a part of the Defence Explosives Munitions and Search School (DEMSS) and are commanded through DEMSS by the Defence College of Logistics (DCL). The responsibility for setting the SOTR for these two Schools remains with HQ EinC(A).

The DTR IPT is seeking to issue Invitations to Negotiate (ITN) to pre-selected bidders for two separate PPP contract packages, one of which includes DCL. A Review Note has been submitted to the IAB seeking to obtain approval for this, which will lead to a period of about a year for bidders to submit proposals, and subsequently for MOD to consider whether to proceed with the PPP proposals. As with other PPP programmes the key issues will be balance sheet treatment, affordability and whether the PPP option will deliver value for money for the MOD over the life of the programme. Corps interest is to ensure that requirements for RE (and Joint Service) training (at NSC and DEODS) are adequately defined and delivered.

One other spin off from DTR has been the establishment, by DGT&E, of a study into Defence Small Boat Handling (SBH) training. This will examine the training carried out by RE, RLC, RM and RN training organizations and may lead to proposals for rationalisation. The Study is due to report in Jan 05.

The Army has now introduced revised Command, Leadership and Management (CLM) training packages for all arms, based on AEC delivered education, and Arms and Service delivered training at each of three stages (JNCO, SNCO and WO). Changes in the AEC elements have been significant but the change to RE JNCO and SNCO training delivered through the Junior Command Course (JCC) and the RE SNCO Course have been relatively minor. RSME has introduced a new four day RE WO CLM course to meet the requirement for WO CLM training. The overall package has been well received across the Army and the new courses will be validated in due course.

The implementation of the Review of Officer Career Courses (ROCC) has continued, with new packages being delivered by RMA Sandhurst, the Defence Academy and the Land Warfare Centre. Impacts on RSME have been minor but the LE Officer Course has been reduced in length and the Battlegroup Engineer Course will be re-focussed. Adjustment to other courses (for example RE Troop Commanders Course) will be made where necessary.

Collective Training

Last year's intent to bring greater clarity to the linkage between policy, capability and resourcing of collective training has been developed through extensive and very detailed Corps inputs to HQ LAND for their Collective Training Implementation Plan (CTIP). This seeks to identify the collective training requirements necessary to provide Force Elements at Readiness (FE@R), and necessitated identification of all

training required by every type of unit and the resource requirements for each task. The results of analysis of CTIP inputs being conducted for HQ LAND, via Project CARDINAL, are due in the New Year, and are likely to lead to reviews of the Mission Tasks List (LAND) (MTL(L)) and Corps Engineer Training Standards (ETS). LAND is developing a Training Readiness Model to replace the Formation Readiness Cycle for which the CTIP analysis provides the underpinning detail of training. In order that the Corps can provides coordinated input into these processes, the post of SO2 Collective Training has been created in my Headquarters, with responsibility for staffing and coordinating collective training issues.

HQ RE Th Tps continues to provide "Force Engineer" direction for operations and training, retaining responsibility for coordination of Special To Arm (STA) Overseas Training Exercises (OTX) which are delivered as part of the LAND Command Collective Training Plan (LCCTP). Budget pressures have forced cancellation of a significant number of OTXs this year, including many Special to Arm OTXs. In part, the loss of RE OTXs has been due to a lack of appreciation outside the Corps of the important contribution that these exercises can make to maintaining deployable engineer capability. In order to secure this training in future, projects will need to be more carefully selected to be both technically demanding and linked to satisfying collective training requirements identified to support delivery of engineer capability for expeditionary operations.

Concepts and Doctrine

UNDER the recent HQ EinC(A) reorganization, Capability Development (CD) branch, formerly Engr 2, has expanded to include combat, infrastructure, sustainability, publications and trials areas of responsibility. The branch continues to ensure that appropriate engineer input is provided to assist with the development of Army, joint and multinational doctrine in order that the full range of our capabilities are widely understood and represented at all levels. This year has remained very busy in terms of conceptual and doctrinal development work. The key areas of interest are as follows:

Combat

Future Manoeuvre Development Cell (FMDC). Support to the DLW sponsored FMDC has continued throughout the year, involving a minimum of one two day seminar per month. As part of the FMDC, the Manoeuvre Support Sub-Concept has been developed by CD branch, which supports the higher level Future Land Operational Concept (FLOC) paper and provides a coherent linkage to other RE doctrine.

Future Rapid Effects System (FRES). Work continues to refine the FRES CONEMP ensuring it is coherent with FLOC and FAS. The intent is that it will deliver an agile effects based medium force, containing appropriate levels of engineer support based on a range of FRES variants which are consistent with the platforms used by the supported force. Critically, Sappers must be provided with the equivalent levels of protection and mobility of those whom they support.

Army 2020. FLOC points the way towards Army 2020 and both Parts 1 and 2 of this study have now been endorsed by ECAB, establishing a pan-Army view. Work on Part 3 will continue over the next year to establish a detailed plan, setting out the developmental work required to achieve this view across all lines of development.

NATO Engineer Doctrine. Development of NATO combat engineer doctrine has continued with the most significant outcome being the formal promulgation of AJP3.12 "Joint Engineering" (now ratified NATO doctrine). Additionally, as custodian of ATP52A the tactical level doctrine publication, the UK is under remit to undertake a comprehensive rewrite of this document by 30 Jun 05.

Infractructure

Water. JWP 4-01.1 Joint CSS Functions (Water) is now with JDCC awaiting editorial effort prior to issue.

Infrastructure. The resurrected WG responsible for the authoring of the JWP 4-05 sub-sets met on 14 Oct 04. 4.05.4 Property Management, 4.05.5 Works Contracts and 4.5.7 Lands Management will be ready for 1* circulation by Dec 04. At the same time, JWP 4.05.1 Command & Control, 4.05.2 Infrastructure Planning and 4.05.6 Finance & Accounting will be at Branch draft and 4.05.3 Design & Project Management will be at synopsis/strawman. These should be complete by mid-2005 at which point work will start on Edition 2 of JWP 4-05 Infrastructure Management on Operations. Subject to approval by JDCC, a JWP will be written covering delivery of power on the battlefield as part of the CSS (Functions) set. Work continues with FR and NL as part of the Army to Army Staff Talks Logistic WG to harmonise the engineer infrastructure staff structure and interoperability matrices for operational infrastructure.

Force Protection Engineering (FPE). Work is underway to transfer the Northern Ireland skills and capability to the wider Defence role, in particular to expeditionary operations. A full training scalar review has started with the aim of improving the FPE training given to all levels from Cbt Engr 1 and Clk Wks to Troop Commanders. Although the current Weapons Effects on Structures MSc course will end in 2006, it is planned to replace it with a 6-8 week Employment Training module straight after ICSC(L).

Force Protection Engineering Steering Group and Conference. EinC(A) has been charged by DCDS(C) with Defence proponency for Force Protection Engineering (FPE). In direct support of this, an HQ EinC(A) Vision Statement has been issued which has, at its core, the principles of balance, co-ordination and flexibility. A Joint Warfare Publication (JWP 3-64.1) on FPE doctrine has been drafted and is expected to be endorsed in the spring. This subject area has a broader international dimension and following a successful inaugural event in 2003, the second Defence FP Engineer Conference will be held at RSME Chatham over the period 26 to 28 April 2005.

Sustainability

Engineer Material. A paper on Engineer Material is being produced for the Army Sustainability Committee in Dec 04.

Logistical Doctrine. ME Vol 23, Engineer Logistic Support is currently under development.

Equipment

CLOSELY linked to doctrinal work is my role as Second Customer dealing with user aspects and capability integration of new

equipment. There have been major successes over the past year.

Combat

Mobility Support. The TROJAN and TITAN programme is progressing well towards its 2006 ISD. The 4 prototypes have completed their contractor development trials and are now undergoing User Trials at RETDU Bovington. The Breaching and Dozing Capability (BaDC) programme will upgrade the Universal Dozer Kit (UDK) as well as procuring a new Magnetic Signature Projector (MSP) and mineplough. The UDK and MSP will arrive in time to equip TROJAN and TITAN. Python will be remounted on AVRE Trailers, (two Pythons per trailer), by the HYDRA project. The Future Medium Minefield Breaching System is planned to replace Python in 2011. The TERRIER prototype is now being assembled and will start trials in Spring 2005. TERRIER will provide a step change in capability over CET and will enter service with an ISD of Dec 2008.

Counter Mine. The Corps Counter Mine capability has three strands: the Dismounted Countermine Capability (DCMC) ISD 2007; the Mounted Countermine Capability (MCMC) ISD 2008 and the Recce Countermine Capability (RCMC) ISD 2018. Furthermore, DCMC has an aspiration to include a line charge system for dismounted forces, providing a 50m breach though AP mines and wire.

Bridging. The Air Portable Ferry Bridge (APFB) system (ISD 2005) will enable light and medium forces to deploy an air portable/air droppable 14m bridge/over bridge, an air transportable 28m bridge, and a ferry, all at MLC 35. It is carried on DROPS, but the basic 14m bridge can be towed behind light vehicles on six special to role trailers. The Two Span Bridge (Pontoon) (TSB(P)) has been brought into service this year. It will allow a 62m crossing at MLC 79(T) and MLC 110(W). It is moved on four DROPS from which it is launched and constructed by a team of 12 men.

Counter Mobility. There continues to be erosion of our counter mobility capability. Post 2008 our mines inventory will consist of SHIELDER and Barmine (which is ageing and will be run on passed its original out of service date). Progress has been made with the Future Counter Mobility System (FCMS) programme, which will provide a family of mines from 2011 onwards.

Medium Force. The Corps' requirements for special to role and general purpose armoured vehicles has been embedded in the Future Rapid Effect System (FRES) programme, which will provide a Rapid Intervention and Manoeuvre Support capability. The requirement now includes FRES AVRE, FRES AVLB, FRES Armoured Engineer Tractor (AET) and FRES Remotely Delivered Mine System (RDMS) with an ISD 2014+. The Future Command and Liaison Vehicle (FCLV), ISD 2007, will provide armoured and mechanised units with wheeled armoured vehicles for roles such as Tp CVs, RSMs, SSMs and Rebros.

All Arms Equipment. More good news is that the Corps is beginning to receive its share of all arms equipment. The Corps will be receiving Light Machine Guns through the winter period. They will replace one SA80 per field section. Work is ongoing to obtain a range of night vision equipment; both general purpose head mounted night vision goggles and specialist reconnaissance equipment.

The Engineer Battlefield Information Systems Application (BISA) – MAKEFAST. The MAKEFAST BISA is the engineer element in the Command and Battlespace Management (Land) digitisation programme. The application will provide tools to support the reconnaissance, planning, design, resourcing as well as command and control of engineer tasks in order to improve mobility, counter-mobility, survivability and sustainability support to the Joint Force. It will be used by RAC support troopers, Infantry assault pioneers and RLC pioneers as well as by Royal Engineers across the spectrum of conflict and in all phases of an operation. The BOWMAN Land Digitisation IPT let the contract on 1 Mar 04 to Thales Communications (UK) to start the Demonstration and Manufacturing (D&M) and Initial Support phases of the MAKEFAST BISA. The D&M phase will run for about 15 months from Apr 04 until Jun 05. On 14 Sep 04 the programme was judged to be ready to start software development. The detailed interface design requirements for tools that support the key user requirements in task planning, resources, minefields, bridge demolition and gap crossing have been agreed. Two new areas of functionality have been included in the contract that provides water supply and the operational training mode tools. The operational training mode tool will enable a user to "rehearse" any element of the MAKEFAST BISA without contaminating operational data. In addition, the orders and planning tool has been developed to control engineer tasks. Task planning, resourcing and reporting elements are included, providing the low level detail, with a capacity for reporting progress up the chain of command, with associated levels of detail. Project planning outputs and critical paths for task completion can be planned, shared and adjusted as required.

Infrastructure

Power. HQ EinC(A) has developed a paper for DEC(ELS) setting the requirement and policy for provision of power in the Land environment across the battlespace. An Integrated Concept Team is being formed to develop the concepts recommended by the paper, which will lead to a coherent power generation and distribution capability across Defence. FEPSs has entered service to provide general-purpose power in the 8-40kW range and is proving very successful. The Lightweight Field Generator (LFG) will replace the range of small (< 1.5kW) generators. LFG was granted limited Service Acceptance on 6 Oct 04 with an ISD of 24 Nov 04.

Water. Work continues to support the Water Dispense Rack programme, an 11,000 litre tank on a DROPS compatible ISO frame. ISD50 is Sep 06. DRLC are Customer 2. EinC(A) will be Customer 2 for the Water Packaging System that is designed to produce highly palatable water in sachets, primarily for rehydration of troops before periods of intense activity. ISD50 is Jan 07. Work is ongoing to formalise the water development, distribution and storage packs originally procured as UORs and to standardise water couplings across Defence on the Storz 75 and 50 mm fittings.

Fuel. ISD for the Deployable Fuel Handling Equipment programme has slipped to mid 2009. Whilst this is regrettable, the current Tactical Fuel Handling Equipment, although manpower intensive, logistically cumbersome and lacking a cross-country capability, still has utility to Defence.

Sustainability

C Veh PFI. Amey Lex Consortium (ALC) is close to completing negotiations with the MoD with contract signature expected in early 05. There will follow a year of implementation during which ALC will conduct unit visits to install MIS and train units in the requirements of the PFI. Concurrently the Capability Management Cell in ESS IPT will be established to run the interface between users and the service provider. The selection and trialling of new equipment will take place and users will be involved in the normal manner. Full Service Commencement is planned for Summer 2006.

Deployable Engineer Workshop (DEW). The funding for DEW has been lifted to afford fivee systems of which three will be held for operations (SPOS) and two will be available for training (GPOS). The system will give Fd Sp Sqn workshops significant additional capability with each trade group having its own area which will be designed for engineering hygiene, environmental control and flexibility to cope with the widest possible range of tasks. First off delivery is planned to be Nov 05.

Regimental Affairs

Corps Charities. The Corps charities face a rapid pace of legislative change through the introduction in 2005 of a new Charities Bill and SORP 2004. Both will place a greater burden of legal accountability on trustees. Despite a sluggish performance in the last quarter of 2003 and the first quarter of 2004 The Army Common Investment Fund continues to grow. At COP on Fri 14th Oct the price of growth and income units were 21 per cent & 15.5 per cent higher than the price we paid when the fund was launched in Sep 02. We have also reaped increasing quarterly dividends since launch.

Corps Auditors. A review of the Corps' current auditors (Deloitte & Touche) is underway. We have received tender applications from charity partners at six leading alternative auditors. A Tender Board, which will be held in November, will make "Beauty Parade" recommendations to the Chief Royal's committee in Dec 04.

The Institution. During the past year there have been many exciting changes to the Institution. The membership has now changed to include Corporals, both serving and retired. Various unit briefings have taken place to inform potential members of what the Institution is about and what it can or may in the future provide for its members. Recently the Institution reviewed its accreditation with the Engineering Council(UK) and propositions are underway for the introduction of post nominal letters. In addition, the Institution is considering the option of becoming a licensing authority for the Engineering Technician grade.

Journal. The changes to the *Journal* are now in place and many articles are being received from the more junior members. This encouraging sign has prompted the relevant prize committee to increase the numbers of prizes awarded in each *Journal*. "Follow The Sapper" (The Heritage Book) is on course to be published in May 2005

RE Band The RE Band performs at over 250 functions per year, mainly for Royal Engineer Units with a small percentage for the wider army, army charities and fee-paying engagements. The Corps Band regularly pays a proportion of income earned in to the Corps Treasury. The Band's strength is 35 but due to retirements and postings on promotion to other bands the current strength is 28. Engagements this year have included the FA Cup Final, European Equestrian Championships at Hickstead, final race meetings at Ascot Racecourse (it now closes for two years for re-development), a trip to Denmark and numerous Army Benevolent Fund Concerts for its Diamond Jubilee. In November a section of the Corps Band travel to Abu Dhabi to play for the Commissioner and the Earl Haig Fund, Poppy Ball.

RE Association. The REA continues to provide support to the serving sapper, his wife or widow and their dependant children who are experiencing hard times. Last year the number of cases the REA assisted was over 1000 at a total benevolence cost of almost £390,000. About two thirds of this comes from the serving soldier who through his generosity is helping those who are suffering "severe financial distress". The range of assistance provided is very diverse. The purchase of Electric Powered Vehicles, bath lifts and stair lifts continues to ease the suffering and discomfort of those elderly former-sappers who have served their Corps and Country, and are now asking for help to ease the difficulties experienced with old age. Apart from Benevolence, the REA continues to have Veteran Weekends and Family Events around the UK and are much enjoyed by all who attend. The formation of "Functional" Branches continues to broaden the REA Membership base with many applications to join the new Armoured Engineer Branch.

Adventure Training. Adventure Training Grants. The Corps made grants totalling £30,656 to 461 RE officers and soldiers taking part in 45 level 3 adventurous training expeditions or challenging pursuits between 01Jan and 30 Sept 04. The expeditions mounted included: diving in the Red Sea; parachuting in the USA and the Czech Republic.

Military Secretary Appointments, Honours and Awards. The following senior appointments were announced:

General K O'Donoghue CBE: Chief Royal Engineer in May 2004
Major General D R Bill: General Officer Commanding United Kingdom Support Command (Germany)
Major General K H Cima: Colonel Commandant
Brigadier D R Wilson CBE: Honorary Colonel 135 Indep Geo Sqn
WO1 (RSM) C Maxwell: Corps Regimental Sergeant Major

During the past year the following awards have been made:

CBE: 3, OBE: 6, MBE: 7, GM: 1, QGM: 1, QCVS: 6, QCB: 1, QVRM: 2, MiD: 4, Joint Comd Commendation: 13, Commendations: 2

Corps Sport

Although commitments have remained very heavy during 2004, the Corps has been able to maintain a footprint in all sports at Army and Corps level, and has had its fair share of successes. For example, the Corps Rugby Union team had a successful tour to Colorado, taking 24 players and playing three successful games against good standard opposition. In the UK inter-corps merit league the sappers won the title for the first time in the history of the competition. Unfortunately,

the Gunners prevented a clean sweep of victories but five wins with only one defeat made us outright and clear winners. At unit level 42 Engr Regt (Geo) comfortably won the minor unit final.

In the Devizes to Westminster canoe race another successful year followed 2003. Five boats were entered with a sapper team finishing first in the military competition and the strongest RE canoe coming second in all classes and first in the Inter-Services – an incredible team achievement for which Major Richard Walker, as team captain, can be justifiably proud.

Corps football had a mixed season that included a hugely enjoyable and successful tour Down-Under where four games were won and only one lost. At major-unit level 3 RSME Regt lost in the semi-final to the eventual winner 2 R Irish. However, success came in the Army Minor Units Cup where 9 Para Sqn were the winners, defeating ATR Bassingbourn in a tense penalty shoot-out. There was a special fixture in Normandy to celebrate the liberation of France in 1944 when a game was played between the sappers and the town on 14 Jul 44. The game was notable in many aspects; the organisation and hospitality of the local Mayor and the players was superb, and the day was enhanced by the presence of two D Day veterans, one of whom had actually played in the 1944 game–and scored the winning goal!

The REYC narrowly failed to retain the Ilex Trophy against the RN, an event that saw the introduction of Buccaneer, a new cruiser/racing boat that will be used for both adventure training exercises and racing. The Clarke Trophy, awarded to a sportsman from the canoeing, sailing and general water sports group, was given to Maj Mark Gidney for his individual achievements and collective organisation of Windsurfing since 1993 – a period in which the team has regularly won the Inter-Corps championships.

In Badminton 36 Engr Regt won the major-units competition defeating AGC Training Centre 5-2 and claimed the title of Army champions for the first time. Individually they provided the runner-up in the Singles, Spr Jas Bdr Thapa with WO2 O'Hara winning the Veterans title; several members of the team later represented the Army in the Inter-Service championships. The Corps cricket team had another enjoyable tour of Barbados, though sadly poor weather played havoc with the games. At minor-unit level 42 Engr Regt (Geo) returned to their winning ways regaining the Army minor units cricket title. The Corps parachute association continues to provide a first class parachuting facility to the Corps with over 200 students trained during the year. RESPS did extremely well at the Armed Forces Championships, taking medals at all levels of competition and entering the highest number of individuals of any Corps or Service. Corps Boxing is now in the capable hands of WO2 Rutherford and in its first major fixture under his stewardship a novice team acquitted themselves well against 1 Para at the Star & Garter Home – further fixtures are planned. Racing cycling, traditionally a strong sapper sport, continues to prosper both at unit and individual level. Sgt Martin Smith took first place in the Inter-Services 25 mile time-trial and continues to compete successfully at National level in the Elite category. Finally, the winter RE Games in Hohne were fiercely contested by 28, 32 and 35 Engr Regts, the latter just securing victory in a very close Games that were superbly organized by the host unit.

Conclusion

Every year I comment on how busy the Corps has been, and this year has been no different. However, I feel that in recent years Defence has formally recognised our contribution, and as a result we will grow under FAS and will see a range of battle-winning engineer equipments being introduced. All of this will take place over the next four years, and will be in addition to the existing, and fresh, operational challenges that face us. The Corps is "Arm of Choice" at Sandhurst, with over three officer cadets applying for every single place, and soldier recruiting is healthy in most trades. One of our biggest challenges now is to retain soldiers, and that requires the efforts of the whole Corps.

I depart the Corps on 4 February 2005, handing over to Brigadier C M Sexton. It has been a pleasure and real privilege to be Engineer-in-Chief at a time of so much operational success and change.

The Unexpired Portion . . .

BRIGADIER J H HOOPER OBE SBStJ DL FCMI

John Hooper was commissioned into the Corps in 1951 and served a good deal of his early career in Airborne Forces, including service in the Canal Zone. He later commanded 25 Fd Sqn, was GSO 2 in HQRE 1(BR) Corps and then commanded 36 Engr Regt. He wrote the draw-down plan for the withdrawal of British forces from Singapore before becoming successively CRE 1st Armd Div and Col GS, 38 Gp RAF. He was then appointed Dep Comd, HQ Wales, but managed to extricate himself to command the British Military Mission to Saudia Arabia. After retirement, he was advisor to HRH Crown Prince Abdullah of Saudi and Chief Executive of an aviation company in the Isle of Man. He was then involved in demining in Cambodia, Mozambique and Somaliland for over ten years He has also been Chairman of Gwent Appeal of the ABF, President of Monmouthshire St John Ambulance, Vice President of Gwent Scouts, President of Monmouth Branch REA and SW Branch, Airborne Engineers Association and Deputy Lieutenant of Gwent.

In the Olden Days, Oh Best Beloved, as I recall, one used to move from unit to unit or to attend a reasonably long course accompanied by the "Unexpired Portion of the Day's Ration". (UPDR). This was a cause of some minor concern to me as I was never given two and ninepence nor any other sum, nor two slices of bread and butter and a kipper to accompany me on my travels. I imagined that the "Unexpired Portion" would be something of that nature and I felt in some way deprived. I just cannot believe that anyone would have taken serious exception to a young Hooper turning up without the UPDR. To a young Hooper, Yes. The lack of a UPDR would have been a minor blip on an otherwise serene scene compared to having a young Hooper on the premises. But it bothered me. What was this Unexpired Portion?

I completed a course at St Omer Barracks, Aldershot, and qualified as a Unit Messing Officer and I still did not know what it was about. Possibly I forgot to ask. Loaded to the gunwales, as I was, with every kind of deliciously edible goodies which were in abundance at every meal and coffee break in St Omer Barracks, the chances of me nodding off in a lecture were high, bordering on certainty. Asking Lance Corporal Mandy, the Ration Storeman, on my return to 9 Sqn, to explain was a total waste of time as he could barely find his way to the ration store let alone his way around a ration account. Such arcane matters as UPDR would have been well beyond his ken. With the usual Hooper luck we were sent to Cyprus on active service very shortly thereafter so Mandy and I were off the hook as far as ration accounting went. I met Mandy many years later and he was then in charge of an AVRE. The mind boggled. However . . .

In about twenty years of soldiering (From National Service recruit to L/A/U/L/Cpl in eight weeks to CO in the rest of the twenty years) the greatest single improvement I experienced in the Army was . . . come on . . .guess . . . It was the standard of catering. The weaponry did not change much. We went from .303 Lee Enfields to the 7.62 FN SLR and from the Sten gun to the Sterling. In the transport department we moved from the Ford Willys jeep via the dreadful Champ to Land Rovers and lost the mules somewhere along the line but not much else changed. But the food . . . That was something else again as they say.

As a teen-aged National Serviceman I was chronically hungry and frequently acutely so. I welcomed Fire Piquet duties even though one was deprived of an evening's worth of the exceptionally limited free time available. Fire Piquet meant that (after a hysterically funny what-to-do-in-case-of-fire rehearsal of what-to-do-with-a-6 x NS-recruit-powered-length-of-hose-on-a wooden-wheeled-axle which usually resulted in any innocent passer-by being seriously soaked) one went to the cookhouse and there dug the eyes out of a four foot high mound of potatoes. The potatoes, and little else it seemed, were destined, on the morrow, to feed several hundred displaced male teen-agers, otherwise known as NS recruits who were now the unhappy and temporary denizens of The Welsh Brigade Training Centre, Brecon.

The attraction of being on Fire Piquet was the unlimited rounds of bread, margarine, apricot jam and tea available from a grateful catering staff. (Catering staff ? Ration rustlers more like and grotty with it) I am quite sure there was some other kind of jam available in the Army but I never saw anything but apricot in vast tins. Since those days in Brecon I have not eaten apricot jam and fifty odd years later I am still not keen on the idea of apricot jam in any form. The tea was quite ghastly and those who knew about these things assured us that it was full of bromide to subdue the worst of our testosterone fuelled carnal urges. However, in those days I think I might have gone along with General George Patton who maintained that "The men can eat their belts" in balancing the ammunition/petrol/food equation during his very rapid advance through France. His belts were leather, apparently. I never fancied 37 Pattern blancoed belts as an *hors d'oevre*. But one was seriously hungry and even the never-to-be-forgotten evil smell of the cookhouse drains could not put one off several slices of bread margarine and the ubiquitous apricot jam. Oh, and pas-

sion-killing tea of course. With lots of sugar.

Some of the early morning gnawing hunger pains of those early days were assuaged by a crafty little scheme which I developed. I am rather ashamed of it now as I ruthlessly exploited three educationally challenged fellow recruits. I should, perhaps, mention here that in order to get this silly National Service over as quickly as possible, so that I could get on with being a veterinary surgeon, I had left school on a Wednesday in July and was in the Army on the Thursday. Normally, anyone having completed Higher School Certificate would have taken a well-earned rest, well, a rest anyway, and not joined the Army until called up in the September. Silly me. Consequently, I think I was the only one in a fortnightly intake of several hundred who had had any education over the age of fourteen. An exploitable situation or what ?

My little fodder-finding fiddle hinged on the fact that one of my fellow hut-dwelling recruits did not like bacon, a second did not like eggs and the third could not stand porridge. I encouraged these innocents not to refuse any of the portions doled out by the cooks but to bring a full breakfast to our 6ft and usually grubby table. We were certainly not allowed to help ourselves in those days. I then helped them dispose of the portions which they did not like. Luckily for me it never occurred to any of the three to swap an egg for a few slices of bacon, or a bowl of porridge for an egg. Ghastly little creep that I was I never pointed out the mutually beneficial, to them, effects of such transactions and I scoffed the lot. I found that hugely, personally beneficial

The only real challenge to the success of this scheme was the need to make sure that I was very close to these three heroes when we were marched to the cookhouse and that no one else cottoned on to my scheme. Never were a shepherd and his sheep-dog more assiduous in rounding up their flock than I with my source of extra rations. We were like Siamese quadruplets as we marched off clad in ill-fitting denims with right arms swinging to shoulder height and pint china mugs clutched in our left hands behind our backs. A wise move, this mugs behind the back business, as any other system wold have resulted in the road to the cookhouse being paved ankle deep with the shattered fragments of "Mugs, one pint, china, white, awful"

But the food was completely consistently completely awful. Some twenty years later when I was commanding my regiment the food was unbelievably good. As my regiment was over 800 strong (or something like that) I was entitled to a specialist catering officer and in true Hooper fashion I fell on my feet. My specialist caterer was a captain who had come up through the ranks and knew every wheeze there was in the catering business. I have to say that his successor, a young captain (probably with a degree in hotel management and St Omer Barracks Medal and bar) was nowhere near as good. My whizz of a catering officer could do no wrong. He converted the maximum amount to cash in lieu of rations that one could and from the proceeds we bought a clapped out refrigerated truck which had to be towed to the barracks but the refrigerated body worked and allowed us to buy several hundred turkeys after Christmas at about five bob each which lasted us until the next Christmas as far as I know. While on *Polex 72* in Suffolk he borrowed a four tonner and we ended up in Maidstone with four tons of potatoes at a give-away price. There were many other similar scams but you get the idea. The situation was quite ridiculous as the catering fund bought us rugger strips and everything we needed in the sporting world. I got a little worried about this (unusual for me I have to say) and mentioned this phenomenon to my Brigadier boss (another wild and woolly airborne type thank God) and asked him to task his staff to look into the whole business of this glut of loot. The Staff could find no fault in the ensuing annual inspection!

Now an odd thing about all this was that we simply could not spend the ration cash allowance or whatever it was called. As my caterer said "I could buy the boys caviar and smoked salmon every day but they wouldn't eat it" They had a choice of at least three main courses every day at lunch and the same in the evening with milk, tea, coffee or squashes to drink as much as they liked and a variety of puddings of course. The other odd thing was that as soon as they had been paid each week they went to the NAAFI to buy hamburger and chips although we put on far better hamburger and chips in the cookhouse (Oops, sorry, soldiers' dining hall by this time). On querying this rather odd preference my soldiers told me that they were not eating "that muck" and preferred to establish their total independence of the system by eating third rate scoff in the NAAFI for which they paid good money. But I forgot to ask about the Unexpired Portion of the Day's Ration.

I like my scoff and am not a happy bunny when there is not enough forthcoming. However, my own efforts usually ensured that whatever the rest of the world was suffering I had enough. This meant that, amongst other things, I taught several members of Her Majesty's Life Guards how to shoot, gut, skin and butcher gazelle in Oman as I was eating well and they were not. They were on an unrelieved diet of compo as far as I could see. However, at the same time my daily lunch for many months, from choice, was a tin of corned beef, some raw onions and "dog biscuits" from a compo pack. My 2IC, a cavalry subaltern, strapped two tins of "mutton Scotch style" again from a compo pack, to the exhaust manifold of his Land Rover about an hour before our lunch break and had a hot lunch daily. I had elected to take ration cash allowance (or whatever it was called, but you know what I mean) in preference to drawing rations. It was some ten to fifteen years before I encountered my wonderful catering officer but even then I knew that there were better ways of eating than through the Army ration system. If I tell you that the chief cook in 9 Sqn was also the squadron 1st XV hooker and he was better at hooking than cooking you will appreciate that one needed a little enterprise in the culinary field. He was not the best hooker I have ever met either.

The deal in Oman was that I used our ration cash allowance to buy delicacies in Aden. I had an "agent" there, another Sapper officer. These delicacies were then flown up to Oman in packing cases as "technical equipment" as and when room on flights became available. There were some funny British Army units in Oman at that time and I used them to ferry delicacies up as well. One unit was the Psychological Warfare Team but one of their number could not spell very well and labelled one crate Pyswar Team much to everyone's amusement and Pisswar Team they were from then on. These delicacies were then swapped for compo rations (only the items we preferred of course) at a highly rewarding rate of exchange. One small tin of prawns for a huge

tin of "dog biscuits" which none of the British soldiers seemed to like, a small tin of smoked oysters for a case of corned beef and so on. My cavalry subaltern was equally ruthless in obtaining his beloved "mutton Scotch style" With locally procured fresh vegetables, dates, fresh fruit and the odd sheep for a change from unlimited numbers of gazelle we did well. Curried gazelle is really quite good, especially for breakfast. What was left over from an evening meal of curried gazelle was put into a thermos container and eaten comfortably warm for breakfast before daylight the next day. My Arab team members ate it so it could not have been that bad ! I thought it was great.

My contemporaries who had experienced the Korean war told some interesting stories about the relative standards of cuisine in the British and American forces in the early Fifties. "What no tutti frutti ice cream" was apparently a standard American complaint. (Or, more likely, a British Squaddie invented cry of derision). However I remember, in about 1955, being immensely impressed when after about four or five hours flying from England we were forced to land on Stüttgart airfield when our planned exercise parachute assault on some German objective was cancelled due to foul weather. Within a matter of not much more than an hour the Americans had produced an appetising hot meal for the whole battalion group as well as a blanket per man. As it was tipping with rain we were more than grateful I can tell you and the food was delicious. Had we landed on a British airfield we would have been lucky to get a sandwich and a cup of tea and definitely no blankets.

Of course, by this time we had progressed (?) to 24 hour ration packs, at least in Airborne Forces. These actually did allow one to survive for 24hrs without the need to eat ones belt (44 pattern by now) The pack contained a "main meal" and a "snack meal" some sweets and sweetened condensed milk in a tube with some tea as far as I can remember. There might have been a "breakfast meal". Naturally, we scoffed the sweets and sucked the condensed milk out of the tube on the move as we seemed to be perpetually on the move. When we judged a halt likely to be long enough we lit the little solid fuel fired stoves which came with the pack and made a hot meal. This was a real gourmet affair consisting of everything except the sweets and milk going into the mess tin and being mashed up and heated together. Delicious. We somehow managed to resist the temptation to chuck in a tea bag as well!

My last military gourmet revelation was first manifest in Oman. This meal was known to the British soldiers as a "fuddle". This squaddie expression came from an Arabic singular imperative " tafadhal" , or , possibly the polite plural "tafadhaloo" literally meaning "Please . . ." but roughly meaning "Help yourself" or "Tuck in", and was shortly followed by "Bismillah" meaning "in the name of God" at which the Arab host dived in, more often than not helping his guest to a succulent portion of very tough goat meat! What one was being encouraged to tuck into was a pile of rice and mutton, goat or camel on a huge metal tray about four or five feet in diameter. This meal I met again much later in Saudi Arabia where I fed with the Bedu off and on for about five years and great fun it was too. I can assure you that the Saudi version of "capsah" , as the rice and meat dish is called in Arabic, was hugely superior to the Omani version. One must, however, allow for the vast difference in wealth between Oman of 1958/59 and Saudi of the early Eighties but the generosity of the Bedu in both countries was quite staggering whatever the wealth or lack of it

"NAAFI Break" Saudi style.

Capsah was the cause of one of my many defeats by the Saudi guardsmen in my attempts to drag them into the 20th century as it then was. I was appalled on exercises by the sight of dozens of groups of about twenty guardsmen each sitting cross-legged in the open around a tray of capsah having come out of their trenches in a defensive position to eat the midday meal. It was useless pointing out their obvious vulnerability and that in war they were unlikely to be supplied with live sheep which they could slaughter and prepare. The CO of one battalion assured me that they would always be able to get live sheep and he was not going without his capsah war or no war. They spurned the various versions of 24 hour ration packs which I got for them to try despite them being "halal". The trial 24 hr packs were very good and made by Baxter's in Scotland.

I wonder how the Saudis got on in the Gulf War with or without capsah. While we are on the subject I might just mention that I was never offered a sheep's eye and never saw a Bedu eat one. What they liked was the fatty substance surrounding the eyeball. Yum Yum !

On these exercises I was on the Directing Staff. One of the greatest pleasures was to come in after a morning in the seriously hot sun to a few dates and several cups of Bedu coffee or tea which was usually mint and heavily sugared and the coffee was mostly cardamom. It was an incredibly refreshing moment and one enjoyed it until the capsah was ready. The

Saudi capsah could be quite delicious. The meat was boiled in huge cauldrons (just like the one the cannibals cooked the missionaries in). The water was then emptied from the cauldron and the insides were coated with olive oil and the cauldron placed back over the fire so that the outside of the meat was nicely browned and crisped up. The rice was full of juicy sultanas and lovely spices with half lemons placed around the edge of the tray. The mutton or goat or camel meat, mixed up with several whole roast chickens, was dumped on top of a huge pile of this delicious rice. The most important guests had first go at the trays and after a muttered "Bismillah" tucked in watched by the next lot in the hierarchy who ate from what was left on the trays when the first sitting had finished but even the lowest in the pecking order still had a good meal. I never tired of capsah which was just as well as it was the main food of the, by now wealthy, Bedu. In earlier days meat happened about twice a year!! Arab coffee or tea was permanently available. The coffee pots, which I am sure you have all seen with their elongated open spouts (so that one could stuff some shreds of fibrous palm bark into them as a filter) were always sitting at the edge of the wood fire and never were they more welcome than in the first cold light of dawn when it was perishing cold! You have never seen more miserable people than cold Arabs. I well remember seeing one Bedu with his "farawah" (a beautiful and fearfully expensive suede, sheepskin lined, cloak) well alight from standing too close to the fire. He did not spill a drop of coffee putting the flames out. Even having lived in the Arctic I was seldom as cold as I was in Saudi at 0100hrs in the middle of winter so I could understand my friends' need for warmth. Oman was just as bad by the way where water froze in one's water bottles up in the mountains. All things are relative however and I suspect it was the huge difference between midday winter temperatures and middle of the cloudless nights temperatures that did the real damage to one's mammalian heating systems.

You may be wondering what has prompted this culinary reminiscence. It was dredged to the surface by something I read the other day. It was a letter from Ogier Ghiselin de Busbecq. It was dated 1 June 1560 but you know what the post is like these days. Well, Ogier (or Oggie Oggie Oggie as he was known to his Welsh friends) was the Hapsburg Ambassador to the Ottoman Court and he was lamenting the standard of his own country's troops compared to those of the Turks.

"How different are our soldiers, who on campaign despise ordinary food and expect dainty dishes . . . and elaborate meals. If these are not supplied, they mutiny and cause their own ruin; and even if they are supplied, they ruin themselves just the same"

You might like to read the rest of his letter which seems to have a message for us today. It is in Edward Seymour Forster's translation of "The Letters of Ogier Ghiselin de Busbecq" (Oxford Clarendon Press 1927 pp 111-112), but I expect you have your own copy and know it by heart. One might assume from his letter that the Turks were prepared to eat their enemies and probably did while Oggie's mob would not fight on anything less than a gourmet meal with wine at the right temperature.

Could we be getting a bit soft too? It does make me wonder with all these fatties around who seem to be a cause of great concern to our nanny-minded politicians. Well that's their problem. I shall always respond with alacrity and huge enthusiasm to the Hooper family cry of "Trotters in the trough" presaging another right royal tuck-in. But what on earth was this Unexpired Portion of the Day's Ration and who had it ? I never saw it.

LPG – IT'S A GAS!

LIEUTENANT J G J ROBINSON

Lieutenant Jeremy Robinson was commissioned into the Royal Engineers in August 2002. He studied at Keble College, Oxford and the Royal Military College of Science, Shrivenham gaining a 1st Class Honours degree in Civil Engineering. On completion of the troop commanders course he was posted to 35 Engineer Regiment in March 2003 to take command of the Mechanised Troop in 77 Armoured Engineer Squadron. He deployed with the squadron in April 2003 on Exercise Buffalo Jump*, BATUS where he commanded a Close Support Troop. The Regiment deployed on Op* Telic 3 *in October 2003 where he commanded his troop and the LPG Support Team. He is due to take up the post of AI Soldier Training, Command Wing in March 2005.*

DEPLOYING on my first operational tour with 77 Armoured Engineer Squadron in late October 2003, I had no idea where the challenges and experiences of Op *Telic 3* would take me. Within days of arriving in theatre extensive force protection improvements were required as the threat level increased following the attack on the Italian base in Nassiriyah. An intensive couple of weeks followed after which breath was drawn and priorities re-assessed. CO 35 Engr Regt, Lieutenant Colonel Nick Baveystock, instructed that a thorough assessment of the development of the Essential Services (ES) be undertaken throughout the entire Brigade AO (Basrah and Maysan provinces). 'Support Teams' were established for each ES: water, sewage, solid waste, power, fuels and Liquified Petroleum Gas (LPG). I was duly appointed OIC LPG Support Team (LPG ST).

BACKGROUND – KBR/EIP

A CIVILIAN engineering contractor, Kellogg Brown and Root (KBR), had been appointed under the US led Taskforce RIO (Restore Iraqi Oil) to undertake works required to stabilize the fragile Iraqi oil industry. The stabilization work included the gas industry which had also suffered from years of under-investment and looting following the war; this left many gas installations barely operational with key components missing.

In order that Taskforce RIO could resolve the medium and long term problems it became apparent that a short term plan could be implemented to compliment and enhance KBR's work. The Emergency Infrastructure Plan (EIP) was therefore established to allow a smooth transition from the fragile post war ES situation to a stable and viable long term solution. It was important to ensure that this transition did not impinge on the political, security and economic process as far as possible. The EIP was planned, actioned and controlled by the Coalition Provisional Authority Southern Region (CPA(S)). It quickly became apparent that the plan was caught up in the bureaucratic rumblings of the CPA(S) and despite grand plans very little had actually come to fruition and there was no visible effect "on the ground".

SCOPE OF DEVELOPMENT

CO 35 ENGR Regt gave clear direction on how the ES development should be approached and applied. The overriding effect was to provide stable, adequate, accessible, reliable and predictable supplies of LPG to the Iraqi population. An assessment of the current LPG supply and demand was required in order to make recommendations. The assessment was to identify the need for technical improvement, an efficient delivery system and an adequate protection structure. While the emphasis of management and ownership would firmly remain with Iraqi administrations, it was important that monitoring of the LPG development be established in order that assistance with technical, managerial and programming advice could be readily sought and given. Once areas of development were identified and the requirement justified, resources were to be acquired with funding bids through Brigade, Division or delegated authority from CPA(S).

INITIAL RECONNAISSANCE

THIS was truly a daunting task and so in order to build up a full and accurate picture of the LPG situation it was necessary to carry out an extensive reconnaissance of all the appropriate LPG facilities. This started at the grass roots of the LPG extraction and production process and worked all the way through to distribution to the customer. Southern Iraq supplies the majority of LPG for Northern Iraq, the distribution process is shown diagrammatically at Figure 1. Figure 2 shows a detailed diagram of the LPG distribution process in the Basrah and Maysan provinces where I concentrated my reconnaissance efforts.

77 Armd Engr Sqn, commanded by Maj Matt Quare, was co-located in Fortress Lines with 100 Fd Sqn R Mon RE(M) and 63 Royal New Zealand Engineers, who had been deployed for purely humanitarian G5 work. Essential Services were included in their remit and so the LPG Support Team gained valuable support in the form of a 2IC (Sgt Inder and latterly Sgt Wagener) and several sappers, both British

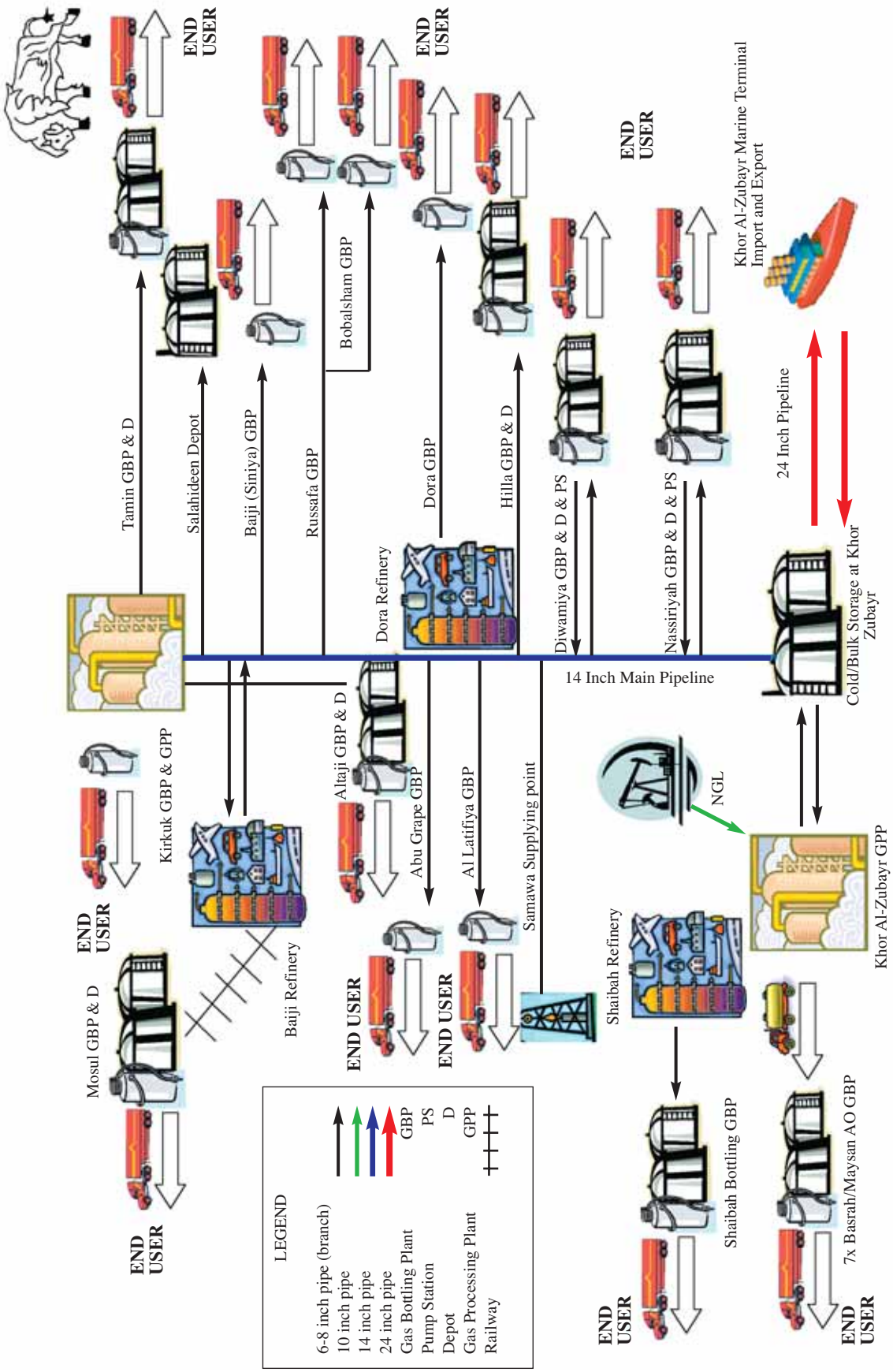


Figure 1 – LPG Distribution Network in Iraq.

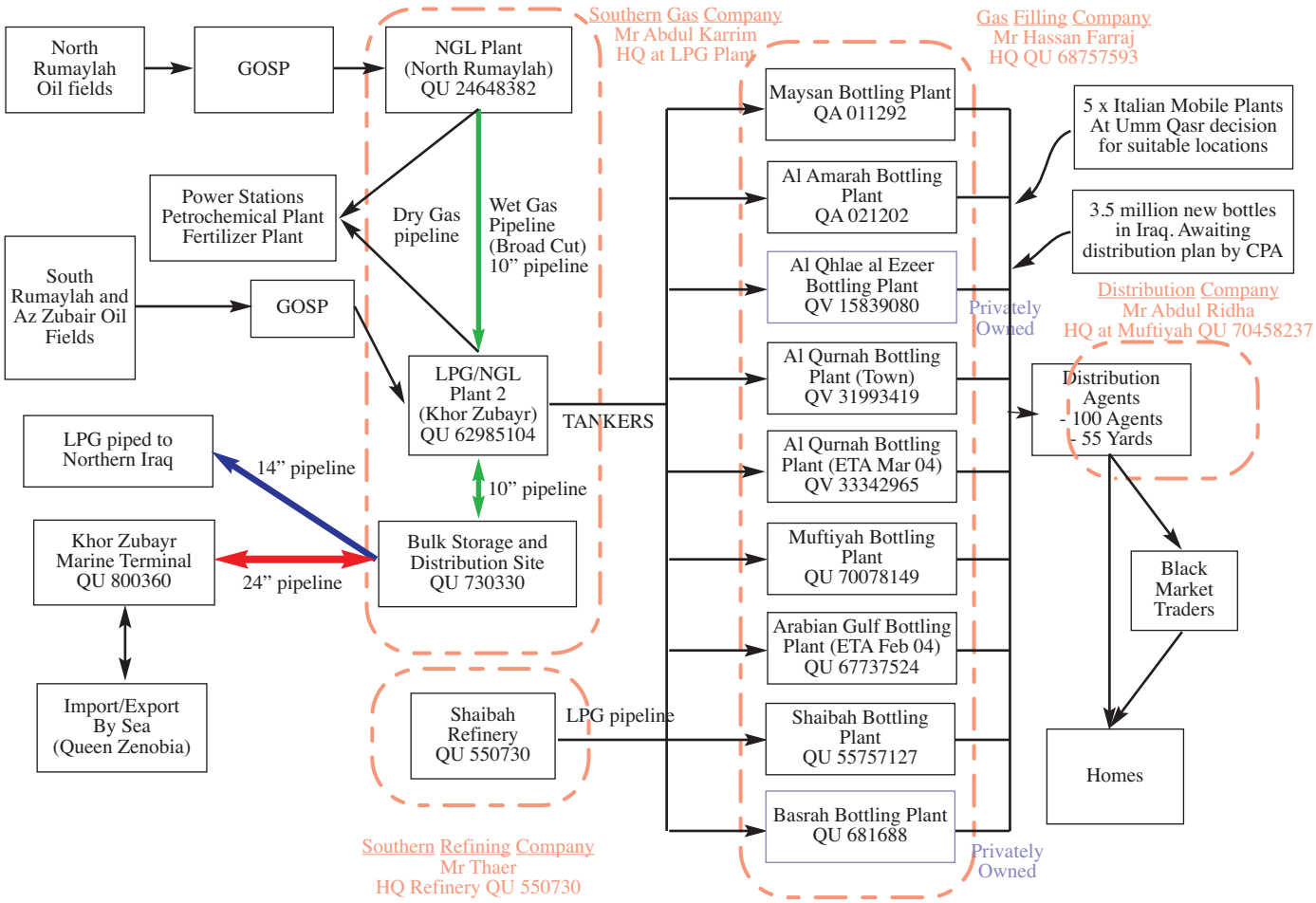


Figure 2 – LPG Production and Distribution in 20 Armd Bde AO (Basrah and Maysan Provinces)

and Kiwi who formed the LPG "rover group". Heading deep into the Rumaylah oil fields the LPG trail began:

Natural Gas Liquification (NGL) Plant. The gas separated at the Gas and Oil Separation Plant (GOSP) is piped to the NGL plant where the gas is compressed and separated to form "dry" gas and "wet" gas. The dry gas is piped directly to power stations, the petrochemical plant and fertiliser plant. The wet gas, more commonly known as "Broadcut", is sent to LPG Plant "2" at Khor Zubayr where it is split into the constituent parts that form LPG. In November 2003 only the North Rumaylah GOSP was operational. The average production of Broadcut gas at the time of reconnaissance was 35 tonnes/hour (840 tonnes/day) with a predicted maximum output of 50 tonnes/hour (1200 tonnes/day).

Since the end of the war the plant had relied upon a sporadic supply of electrical power from the main grid which had led to numerous "shut-downs". The restart time for the plant would be between 24 hours and 10 days dependent on the level of pressure remaining in the compressors. KBR installed 2 x independent double gas turbines at the plant in early December. This has resulted in a reliable supply of power and hence a constant supply of gas to the LPG plant.

LPG Plant. There are several LPG production plants in southern Iraq however on our arrival only the LPG Plant 2 at Khor Zubayr was functioning. The LPG plant suffered in a similar manner to the NGL plant post war and only had one of its three "trains" operational at time of reconnaissance. Each train contains two columns which distil off the different gases. Propane, butane and gasoline are produced during this process:

LPG Mix Ratios. The mix of propane and butane in the LPG is dependent on the time of year. The ratios are as follows:

Ser	Season	Propane %	Butane %
(a)	(b)	(c)	(d)
1.	Summer	70	30
2.	Winter	30	70

Production Capacity. 80 per cent of the Broadcut that arrives at the plant can be produced into LPG. The output is regulated by the supply of gas from NGL. As only one train was fully functioning at the time there was a limit to the amount of LPG that could be produced on site. It was the intention of KBR to have the other two trains operational by mid-February.

- Average output (Dec 03): 1000 tonnes/day
- Predicted output (Feb 04): 2000 tonnes/day

Distribution. The demand for LPG depends greatly upon the time of year. During the winter months there is a much higher demand than in summer. At time of initial reconnaissance the demand was at its highest. The LPG that is produced at the plant is distributed as follows:

- Via Tankers (Basrah/Maysan): 300 – 500 tonnes/day.
- Piped to Bulk Storage: Balance that it not collected by tanker.

Bulk Storage Facility – Khor Zubayr. Gasoline, Butane and Propane are stored in large quantities at this facility awaiting either export through the marine terminal or for use in Iraq. The marine terminal is presently being used solely for the import of LPG to cope with the demand required by the country. When LPG Plant 2 is unable to produce its own supply then LPG is piped from the bulk storage. It is, however, the North that requires the majority of the LPG stored. Between 1500 – 2000 tonnes/day are piped through a new 14" pipeline. Several ships continuously import LPG through the marine terminal to ensure that the demand is met. KBR were confident at this stage that they would be able to have Iraq exporting LPG by the end of 2004. This will be the first time Iraq has ever exported LPG. The marine terminal was preparing to receive its first ship for export in 1990 when Iraq invaded Kuwait. All the equipment at the terminal is new but has been left to deteriorate over the last 14 years. The overall condition of the loading arms and associated equipment is still remarkably good, with just specialist equipment needing replacement.

LPG Distribution Process. The LPG that is produced at the Shaibah Refinery and LPG Plant is either transported to Northern Iraq via pipeline or collected by 20 tonne capacity LPG tankers and delivered to the LPG plants. The Gas Filling Company (GFC) manages the majority of the bottling plants in the Basrah and Maysan provinces with the exception of a few independent, privately owned plants. The GFC hire the majority of delivery tankers from the Distribution Company who then manage the movement and delivery of LPG from the LPG Plant to the respective bottling plants. Distribution agents fill their empty bottles at the bottling plants before selling them onto the customer at their own bottling yards. Figure 2 shows a detailed diagram of the LPG distribution process in the Basrah and Maysan provinces. Figure 3 illustrates the production, percentage supply, deliveries and workforce statistics for each plant.

Gas Filling Company. The GFC is a government organisation under the umbrella of the Ministry of Oil with a head office in Baghdad. The company has suffered from under funding and lack of investment since the 1970s. Only in the last few years, through the UN Food-for-Oil programme, has any modernisation taken place with the slow introduction of new bottling plants and bottles. Presently there is a programme for ten new bottling plants to be installed throughout the country. The GFC intends to install four of these in Southern Iraq by the end of the year. The four new plants are intended to be constructed, in order of construction priority, at Arabian Gulf (Basrah), Al Qurnah, Al Amarah and Nasariyah. It became evident at this early stage that very little action had been taken toward the construction of these plants and that a firm, guiding hand was required to get these projects moving. In addition to these plants, five "mobile plants" were gifted by the Italian government. Once released these plants will be set up at strategic locations where demand is high and there is no local bottling plant. The plants are not "mobile" in the full

Ser	Region	Bottling Plant	Average Production (bottles/day)	% Region	Storage Capacity (tonnes)	Deliveries (tonne/day)	Power Supply	Workforce	Remarks
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
1.	Maysan	Maysan	4000	57	60	40 – 60	Generator	57	
2.		Al Amarah	3000	43	40	20 – 40	Generator	65	
3.	Al Qhlae/Majarr	Al Qhlae al Ezzer	3000	100	40	0 – 40	Generator	35	Privately Owned
4.	Al Qurnah	Al Qurnah (Town)	3500	100	20	40	Main Grid	57	
5.		Al Qurnah (New)	12000	tbc	75	-	-	-	ETC Mar 04
6.	Al Basrah	Muftiyah	7000	27	60	40	Main Grid	56	
7.		Shaibah	15000	59	1100	200	Main Grid	80	
8.		Basrah	3500	59	40	40-60	Generator	30	Privately Owned
9.		Arabian Gulf	12000	tbc	100	-	-	-	ETC Feb 04

GRID REFERENCES:

		Al Qurnah (New):	QV 33342965
Maysan:	QA 01112923	Muftiyah:	QU 70078149
Al Amarah:	QA 02122020	Arabian Gulf:	QU 67737524
Al Qhlae:	QV 15839080	Shaibah:	QU 55751270
Al Qurnah (Town):	QV 31993419	Basrah:	QU 68126883

Figure 3 – LPG Bottling Plant Summary 20 Armd Bde AO (Maysan/Basrah Provinces)

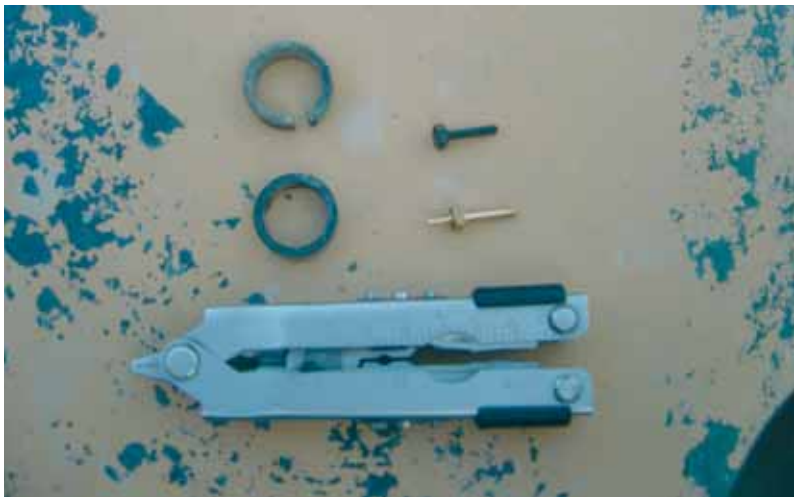
sense of the word, they can be transported easily to a location but must then be set up and remain stationary at that location.

Distribution Company. Based in the Muftiyah region of Basrah the Distribution Company controls the delivery of all the oil products around the AO. 11 LPG distribution tankers are hired to the GFC on a monthly basis to delivery gas to each of the bottling plants. The Distribution Company also controls the distribution agents. To become an agent one must apply for a licence from the Distribution Company who will judge each application on how well they satisfy a number of criteria such as safety and security of their "yards". At present though, there are more agents than yards. The number of agents was increased after the conflict to counteract the increase in demand. There are 100 agents and only 55 yards. Those agents without yards will either sell at another agent's yard or in a specific location, such as the side of the road! The Distribution Company has an inspection team that works in cooperation with the local councils to ensure the agents are selling their bottles at the recommended price.

Black Market. There is a thriving LPG black market. These are usually in the form of a horse and cart that have become such a familiar site along the roads of Basrah. In an ideal environment these traders would be stopped so that the councils could have a greater control over who is selling LPG. This is however, anything but an ideal situation and these black market traders actually provide a much needed service. There are many areas particularly the smaller villages that are not near to a distribution agent's yard or areas where the trucks cannot gain access due to the width of road. It is in these circumstances that the black market trader will operate, selling LPG bottles onto those who would find it hard to get it otherwise. These black marketeers are, however, impossible to regulate and it has been known for the price of a bottle to be sold at ten times its recommended sale price.

Prices. During the winter months there is a greater demand for LPG to provide both heating and lighting as well vital cooking fuel. If this demand is matched by supply then the price will remain mainly unchanged. If, however, there is a shortfall in supply then the distribution agent can monopolise the bottles he holds and over inflate the price. The key to keeping the price of a bottle low is a regular supply of LPG from the LPG plant. Prices rose to an all time high at the end of September and October when supply was not being met by demand and led to a LPG crisis which was only resolved once LPG import quantities were increased.

Ser	Price (per bottle)	Cost (IZD)
(a)	(b)	(c)
1.	Recommended	500 – 1000
2.	Black Market	1000 – 1500
3.	Worst case	6000
N.B. $1 = 1500 IZD at time of reconnaissance IZD: Iraqi Dinar		



A broken (top) and new (bottom) O-ring and needle.

LPG Bottling Plants. The bottling plants were no exception to the years of under funding and neglect. Although the UN Food-for-oil programme had started to bring in new equipment, it was heavily controlled by the former regime and usually issued as a "reward" to a loyal workforce rather than on a need basis. This has resulted in large quantity of equipment that has yet to be distributed. There were a number of key issues that were generic to all the bottling plants throughout the AO these included:

Workforce and Pay. The Ministry of Oil introduced a new pay structure on 1 Jan 04 by which employees are on a variety of pay scales depending on their job description. There is a basic pay rate of 3000 IZD which most temporary basic labourers receive. The permanent workforce receive 5000 IZD. The Ministry had decreed that certain jobs, i.e. working in dangerous conditions, would receive a "danger pay" bonus of 30 per cent. This had been identified for LPG plant workers however receiving the bonus proved to be harder proposition.

Security. This is definitely one area of relative success. Immediately after the conflict and for subsequent months, there was a great deal of theft and looting which left bottling plants with damaged and stolen equipment. As the Coalition Forces gained control of the AO and the confidence of the people, the crime rate aimed at the plants has significantly reduced. All the plants also employ their own armed guards day and night which help to perturb thieves.

Spare parts. There was a wide and varied list of deficiencies particular to each plant however there were certain spare parts that were lacking throughout the system. These were, more specifically, O-rings, needles, filling hoses and heads. The filling hoses are required for the LPG tankers to fill the bottling plant's storage tank; and the heads are required for bottle filling. On average the plants only had between 50 – 70 per cent serviceable filling heads. The O-rings and needles form part of the LPG bottle valve. With the majority of the LPG bottles in circulation dating back to the 1970s there are in a very poor state of repair. The bottles can however, be made fully serviceable again by replacing its O-ring and the needle. The needle is vital for the containment of the gas and the O-ring forms the seal for filling. A bottle that is missing either of these is effectively useless. There was a severe

shortage of these parts and as a consequence hundreds of thousands of old bottles are now out of circulation. Replacing the O-rings and needles extends the life of a bottle, increases their capacity by almost 50 per cent and in the short-term delays a potential bottle shortage.

State of disrepair at the Shaibah Bottle Repair Workshop.

Action Plan

THE LPG Support Team travelled to every corner of the AO to detail every aspect of the LPG industry. In order to make an informed plan it was vital to see every location first hand and speak to the respective Iraqi management. It became apparent that the solutions being posed by the CPA(S) under the EIP did not consider the views of the local LPG management. The bureaucratic nature of the CPA(S) coupled with inaccurate and ill informed reconnaissances by civilian contractors resulted in a very limited amount of positive action being taken. To ensure there was not a repeat of this I ensured much of my time was spent listening to the Iraqi's ideas and canvassing their opinions on solving the problems faced.

The result of the extensive reconnaissance was an action plan which detailed a clear investment, monitoring and re-education plan to prevent a reoccurrence of earlier LPG crisis's. A large impact could be made in a short time frame by a targeted investment programme. The current LPG system was, quite literally in places, holding together by a few nuts and bolts. The closure of just one bottling plant would have a significant impact throughout the AO. This programme identified areas where investment could make an impact in the short, medium and long term. Concurrently and in conjunction with investment into the LPG industry it was essential that all areas be monitored for progress and effect. By accurate monitoring, action plans could be scrutinized and if necessary re-assessed and adjusted.

Much like the remainder of the public sector, the Iraqi LPG industry was operated by a dictatorial command structure in Baghdad. This led to a reliance on Baghdad for any decision, the concept of a command decision or initiative was unheard of. It was this concept of forward planning, decision making and responsibility that the action plan aimed to re-establish in the management. Re-education was not to be limited to the management, the workforce and public were to be educated toward the care and maintenance of equipment, specifically bottles. By educating them to look after their bottles, in particular new ones, it will extend their life and reduce the requirement for repair and replacement.

So an action plan with a desired outcome of an affordable, accessible and predictable supply of reliable LPG to the Iraqi population was produced. The emphasis was to remain with the Iraqi administrators to pave the way forward with a degree of support and guided investment from the CPA and 20 Armd Bde:

Implementation of Action Plan

Liaison.

Liaison between the various agencies, offices and management would prove vital in producing the immediate effect detailed in the action plan. At an occupying forces level there was no other group as closely in contact with the LPG industry than the LPG Support Team. We therefore found ourselves briefing the weekly LPG situation at Divisional, Brigade and Regimental level.

Regular production and equipment states were provided by the LPG and Bottling plants which were subsequently used to predict future requirements. As far as possible the manager of the GFC, Mr Hassan Farraj, would take part in these weekly meetings. Only during the latter stages of the tour did the EIP start to be implemented. To ensure the Iraqi management were aware of what was intended in the EIP the LPG ST set up meetings between the main contractor, Mott MacDonald, and the GFC to ensure both were fully aware what was going to be constructed where and when.

In March I was approached by Mr Jes Moller, a Danish engineer. He was planning, on behalf of the Danish government, to invest $8 million into various areas of the oil and gas industry. After several constructive meetings it was decided that a complete replacement of the ageing carousel bottling plant at Shaibah Refinery would be undertaken. A new bottle repair facility would concurrently be constructed on the same site. This was a completely independent project to either the EIP or the coalition forces however the LPG ST provided the liaison and trust between the relevant parties involved.

It is important to mention the relationship that was established between me and the Iraqi workforce. At such as fragile time in the country's history it was important that the locals not only cooperated with you but that they also trusted you. It took several months to build up a trusting rapport with certain key characters; one could understand their initial scepticism having been promised help time and again from other agencies which time and again failed to deliver. Once they began to see the results of our endeavours, trust and cooperation came naturally. The other Essential Services Support Teams found themselves in a similar position by the end of Op

Telic 3 and there is a strong argument to extend tour lengths for positions in such areas of influence.

Liaison with the local populus was best provided by my interpreter "John" (Khudayer Sajet). He provided me with 'on the street' intelligence which, although not always the most reliable, gave me a view as the locals would see things. From this intelligence I could react to potential problems such as strike action and in one case rioting. John is the true Del-Boy of Basrah and if he didn't know a man that can then he's not worth knowing. His significant contacts within the Basrah Governors Office proved invaluable at times when planning permission and other spurious approvals were required. Working in a theatre such as this it really brings home the saying of:

"It's not what you know, it's who you know!"

Investment.

The investment plan ranged in it's ambitions from the installation of a pipeline north to Al Amarah to the simple provision of Personal Protection Equipment (PPE) for the entire workforce. By the end of April 2004 the following investments and purchases had been approved and distributed:

- 300,000 + O-rings and needles purchased with a similar number on order.
- 4 x New Generators for Bottling Plants.
- 2 x Air Compressors with 1000m reinforced rubber hose.
- 600 sets of PPE and uniforms for workforce.
- 3km route improvement.
- Storage Tank refurbishment.
- Various bottling plant infrastructure repairs (roofing, gates, security fencing)
- Installation of two brand new compounds for permanent bottling plant.
- Construction of bottling plant in Al Faw.
- Fleet of 4 new LPG Tanker and Trailer units.
- 100 new bottle filling heads (each plant uses 25 on average).

Many of the items could be either sourced or manufactured locally. Rather than pay over the odds for goods from Kuwait I would, as far as practical, procure goods locally hence helping the local industry.

Other areas of investment included the work by Mott MacDonald under the EIP and ongoing contracts from the UN food-for-oil programme. 8,000,000 new bottles have been donated under the UN food-for-oil programme; Basrah's share of this was initially 1,000,000. Under the supervision of the LPG ST the distribution of these bottles has begun, it is important that they are all distributed as soon as possible as the spare parts bought are only intended as a short term solution (up to a year).

The biggest single investment made by the LPG ST was the purchase of four new LPG tankers. It was identified that the present tanker fleet of 11 decrepit tankers were in a state of disrepair and too small to supply the AO sufficiently. The four tankers bought would be controlled by the GFC rather than the Distribution Company. This gave the initiative back to the GFC who know where and when to deliver as supplies run low at respective bottling plants. These four tankers were bought primarily to serve the northern plants and only to be used locally if there was no requirement from the north. Two further tractor units and four tanker trailers have been purchased under the EIP, when delivered they will be for the sole use of the Al Amarah and Maysan Bottling Plants with the idea of increasing a "strategic reserve" in the northern part of the AO.

Security.

Security remained an issue throughout the tour and continues to poise a bigger threat now as terrorists attack vulnerable targets such as oil pipelines. Late last year there were a number of instances of looting but no real terrorist threat. The LPG ST provided the bottling plants with adequate firearms for self protection and meetings were held with the Iraqi police to increase protection and provide training as required. The smaller independent bottling plants will continue to remain at threat while the bigger plants, such as Shaibah Bottling Plant are protected by the refinery security personnel.

The LPG ST itself travelled in a rover group of two vehicles and eight personnel with firepower limited to personal weapons and one GPMG per vehicle. This provided adequate protection when stationary but also the manoeuvrability to reach remote locations that armour would not.

New Filling Heads being manufactured locally in Basrah.

Situation – May 2004

A great deal had been achieved by the time 20 Armd Bde saw Op *Telic 3* to its conclusion, but it still felt as if we had only just scratched the surface. During this time most equipment had been delivered however several longer term projects continue into Op *Telic 4* and beyond. These include the establishment of the two new bottling plants in Basrah and Al Qurnah along with the construction of a small bottling plant in Al Faw, which has always been reliant on supplies from Basrah, some two hours drive north. The planning for the Danish project of refurbishment and rebuilding at Shaibah refinery continues with an estimated completion time of January 2005. Hundreds of thousands of

New automatic carousel bottling plant equipment being installed at Arabian Gulf Plant.

New Generator at Al Amarah Bottling Plant.

new bottles continue to arrive at Umm Qasr port awaiting distribution under GFC and LPG ST guidance.

In early April KBR ceased all new projects as investigations begun into financial irregularities, this left large projects in a frozen state. There had however been no significant problems indicated by the Iraqi management. It is evident though that the LPG industry is still reliant on imports, therefore it is imperative that KBR's work continues at the LPG/NGL plants as soon as possible. This will create a self-sufficient Iraq, and in time allow for export of LPG.

Lessons Learnt

At a managerial level it was immediately obvious that parties that should speak to each other on a regular basis not only when there is a crisis. In addition to this certain elements of the military and CPA were very insular in their approach to situations, making decisions without consulting the Iraqi management. Through consultation a better solution could be arrived at, saving expensive and ineffective projects. After all, the Iraqis will have to manage the industry for themselves soon enough.

It has become obvious that the Iraqi workforce has the intelligence and experience to solve almost anything thrown at them, the fact some plants are still functioning is a testament to this. Instead of getting blinkered by big projects, more attention should be paid to the smaller projects which can easily be financed and have a sustained and lasting effect.

If any proposed projects are going to survive the future it is vital to re-educate a "former regime" corrupted population. This works from the management level downwards, such as encouraging proactive decision making and looking to invest in the future. From the population's perspective it is persuading them to treat the bottles and tankers with respect, reducing damage and increasing their lifespan and capacity.

Summary

The LPG industry has suffered from years of under-investment and mis-management which have left it struggling to cope with demand. Last year saw a shortage in the production of LPG which lead to an LPG crisis and the substantial inflation of prices. The work carried out during Op *Telic 3* has helped create an affordable, accessible and predictable supply of reliable LPG to the Iraqi population. The emphasis must remain with the Iraqi administrators to pave the way forward with a degree of support and guided investment from the Coalition Forces.

Missing in Action

FRANK G DORBER

Frank G Dorber is a Mancunian by birth, but now resides in North Wales. He used to work in the Financial Services Industry and then became a hotelier in partnership with his sister. He is now involved in writing for military magazines and trying to get interest in a proposed Hollywood "movie" about a British commando officer. His main interest and love is British military history – in particular the aviation history of the two world wars. He regularly visits the Menin Gate ceremony for all those declared "Missing in Action" (MIA), and the war cemeteries to lay individual poppies on particular graves. As a post-war child, he regards trying to find out the fate of MIAs on behalf of their families and friends as a debt of honour. Mr Dorber is also a member of two aviation research charities whose members encompass the world and are the focal points for all serious research on World War One aviation history. Many are also interested in World War Two and later, hence his interest in the two stories that follow.

Editorial Note:
Readers may recognize the basic details of this article from a notice published in the Christmas 2004 issue of Sapper *Magazine. None of the editorial staff knew anything about the MRES (Missing Research Enquiry Service) and given that Mr Dorber's first enquiry concerns a sapper witness, and that his next concerns a Sapper VC, Major Edward Mannock VC DSO** MC* we thought you may find the expanded story as interesting as we did.*

Background

On the 13th April 1945, a German road convoy was struggling to escape eastwards across the River *Elbe* along the Dannenberg – Dömitz road. As they neared the bridge at Dömitz, they were attacked by a number of Hawker *Tempest* fighter aircraft. One of them, flown by Sqn Ldr Keith Granville Taylor-Cannon DFC* RNZAF, ("Hyphen" as he was affectionately known), made its diving run and by the time it launched its assault, was flying low over the impressive bridge. It was hit by fire from troops on the bridge and the engine area instantly burst into flames, causing the aircraft to pull up and around. Within seconds Taylor-Cannon was obliged to bail out, his parachute being partially burnt with several panels missing. As he descended, he drifted on the wind over to the eastern bank of the river, which was still held by enemy forces. He was seen to land, still alive, by his colleagues still in the air, and they were able to report the map reference. After this, they lost sight of him and he was officially posted as MIA (Missing In Action).

Starting the Enquiry

At the cessation of hostilities, the New Zealand authorities and the British Missing Research Enquiry Service tried to make separate local enquiries about Taylor-Cannon's disappearance but were unable to establish anything for certain. The MRES however somehow made contact with a former RE prisoner-of-war who they simply named as "Sap. A.G. Taylor" *(sic)* This man explained that on the date in question, he had been in the vicinity whilst being transported eastwards to a PoW camp. By chance, he had been halted near the bridge at Dömitz and had witnessed the descent of the pilot. He claimed that as the pilot floated down, he was shot at by *Waffen-SS* troops who then searched for and found the man in a wounded condition. They collected him in a motorcycle-sidecar combination and *"drove him away towards the main road north of the River Elbe"*. Sapper Taylor also asserted that somewhere along that journey, the pilot was executed. Whatever really happened, to this day Sqn Ldr Taylor-Cannon officially remains MIA.

Trying to Identify Sapper Taylor

The Ministry of Defence cannot now find the original MRES file, which has probably been destroyed. Excerpts from it were however transcribed by the Air Historical Branch, but these do not fully relate the account given by Sapper Taylor – the references do not even properly identify him by his service number or the unit he served with. My own research however leads me to the very strong suspicion that he was 2003557 Spr Arthur George Taylor, German PoW No 6575, born on 29th April 1918 in Albury in either Hertfordshire or Surrey. His next of kin were his parents who lived at Haywards Heath. Taylor was in 262 Field Company RE and had been taken prisoner in 1940 near Arras during the retreat to Dunkirk. He was in several prison camps, but I believe he ended the war at Camp 20A at Thorn.

I cannot be absolutely certain that this was our man, but it seems very likely that he is. Unfortunately, neither the RE Museum nor the Ex-POW Association could find any information about him since his release from captivity – he was, apparently, never a member of the latter organization. It is hoped that the appeal in *Sapper* Magazine and also this article, might elicit a response from anyone who can confirm the

correct identity of Sapper A G Taylor and enable us to learn of his fate. Hopefully of course, the man himself may contact me, or it may be that someone who knew him can verify his current location or provide, if it is the case, details of where and when he died. If he is dead, then hopefully he may have left his family some memorabilia that includes a detailed account of the incident, with details of the MRES enquiries. I am hoping also that there may be others who know something and may be able to offer additional advice. It is also unlikely that Spr Taylor was being transported alone – there may be other RE witnesses who would allow me to use their testimony for posterity.

Research in Germany

I have learned from local scholars in Germany that on the date in question, there were no *Waffen-SS* troops in the vicinity; only a few stragglers who came along at a later date, merely seeking to escape rather than fight – indeed most had nothing to fight with by that time. It also seems that there were no *Volkssturm* troops in the region, who also may have been prime suspects for any such obscenities of this nature. Instead, it seems likely that the troops who collected Sqn Ldr Taylor-Cannon were ordinary soldiers whose field uniforms looked similar to those of the *Waffen-SS* from a distance. It is entirely possible that in accordance with their usual procedure, he was collected by a team sent from the *flak* batteries at Dömitz. The position where he landed was a featureless landscape, slightly marshy, near a northern road but also still very near the main road over the *Elbe* that still leads on towards Ludwigslust. It seems therefore more likely that he was driven towards that road rather than northwards into the Quast Forest as might be assumed from the comments of Sapper Taylor. I have also learned that there was an airfield at Ludwigslust that had its own hospital. It is therefore possible that Sqn Ldr Taylor-Cannon was driven first to Dömitz for inspection by the local commander and then to the airfield or the hospital if his injuries were more serious than realized by his flight colleagues. The journey would only take about twenty minutes by motorcycle and it could be that if he had died on the way, he may have been buried near the road.

Unfortunately the ground was fought over in the following few weeks when the Americans and the Russians converged upon the *Elbe*. All the gunners that defended the bridge are believed to have been killed when the Russians steamrollered their way through. There are clearly several possibilities regarding the reasons for the disappearance of Sqn Ldr Taylor-Cannon after he landed and I am attempting to investigate them. I have received the help and cooperation of the German communities in the area, but there may still be others who can help. Perhaps another serviceman who was taken prisoner on that day and witnessed his death and burial, or perhaps was treated at the hospital and saw a stocky, decorated curly-haired squadron leader with a New Zealand accent also receiving treatment.

Sqn Ldr K G Taylor-Cannon DFC* RNZAF

My object in researching the whereabouts of Sapper Taylor and the details of the incident is find Sqn Ldr Taylor-Cannon's body and afford him an honourable burial which can be attended by his family and remaining few friends. "Hyphen" Taylor-Cannon, from Omakau in South Island New Zealand, was born on 20 December 1921. He received his secondary education at Alexandra District High School and applied for enlistment in the RNZAF in October 1940, whilst still at school. He joined the RNZAF on 13th April 1941, and after training, was posted to the UK. After further training on Hawker *Hurricanes* with No 56 Operational Training Unit he was posted on the 24th March 1942 to No 486 (New Zealand) Squadron as a Sergeant. When he vanished, he had been the longest serving member of his squadron which at that time was attributed to be the most hard-working and versatile squadron then on operations over Europe. From its formation until disbandment, its personnel flew 11,019 sorties totalling 13,350 hours. In combat 81 enemy machines were destroyed, five probably destroyed, and 22 damaged. The unit also accounted for 223 flying bombs. In attacks on ground targets 323 motor vehicles and 14 railway engines were destroyed, while 16 ships were almost certainly sunk in port or at sea. The squadron also jointly held the record for most air victories over enemy aircraft in the *Tempest* type – the other unit being No 56 Sqn RAF which has a long and distinguished history from the 1914-18 War.

Major Edward Mannock VC DSO** MC*

I am also researching the loss of a great RE serviceman from the 1914-18 era, Edward Mannock. He was our greatest front-line air leader of that time and is now the most highly decorated flyer of those still posted MIA. I believe that I know where he lies, but presently I cannot obtain the final pieces of information to prove it beyond doubt – so much vital evidence has been destroyed in Britain as well as in Germany and France since 1918. However I will never give up until absolutely all avenues have been explored and I will then know precisely why his body cannot be recovered.

The Integration of Headquarters 5 Field Squadron Royal Engineers Into the Battle Group Headquarters of 1st Battalion the Princess of Wales' Royal Regiment Battle Group

CAPTAIN A S GREEN BEng(H)

I wrote this article at Camp Abu Naji, home of 1 PWRR BG near Al Amarah in Iraq on Operation Telic 4. *My OC thought it would be a good idea to reflect on some Corps doctrine in my "spare time" in between carrying out my various functions as BGE 1 PWRR BG and dodging mortar bombs. Despite the many attempts of various militia groups my reflections have remained intact and are included here for your reading pleasure. I am currently on the Professional Engineer Training (Electrical & Mechanical) course and enjoy sailing and running in my spare time.*

Introduction

The purpose of this article is to explore the integration of Squadron Headquarters 5 Field Squadron RE (SHQ) into the Headquarters (BG HQ) of the 1st Battalion The Princess of Wales' Royal Regiment (1 PWRR) during the 2003 training year. Having completed the 2002 training year as a troop commander with 11 Field Squadron I arrived at 5 Field Squadron as a newly appointed Battle Group Engineer (BGE) keen to impress with my knowledge of Close Support (CS) engineering. Operation *Fresco* (military support during the Fire Service strike), put paid to my hopes of early integration with the BG and a steady build up to the rigours of the training year. However, during the turmoil that was Operation *Fresco* the Squadron was able to make good use of the facilities at the Combined Arms Tactical Trainer (CATT) located a short drive away from Tidworth at Warminster. Initially the command element of the Squadron practiced tactics and procedures in isolation in order to refresh memories and to bring everyone around to the same way of thinking. Later the Squadron used the CATT to practice supporting the BG directly. Right from the start my OC highlighted the need to give the BG the best possible support; both in terms of work on the ground and advice and planning expertise at BG level. As 5 Field Squadron was affiliated to both the 1 PWRR and 1st Battalion The Cheshire Regiment (CHESHIRE) BGs the Squadron faced the perennial problem of all UK CS Squadrons. How were we going to directly support two BGs? As a result of discussions at both Regiment and Squadron level, it was decided that only in exceptional circumstances would 5 Field Squadron, organized as a 1-2-1 (i.e. one armoured, two field and one support troops) squadron, have to support the Warrior based 1 PWRR BG and the Saxon based 1 CHESHIRE BG simultaneously. Due to their different natures it was decided that the 1 PWRR BG would be the primary BG and should therefore be the focus of the Squadron's attention. This decision was somewhat forced by the truncated nature of the training year following the eventual end of Operation *Fresco* two weeks prior to Exercise *Druids Dance*, the significant test exercise prior to deployment to the British Army Training Support Unit Suffield (BATUS) in Canada.

CO 22 Engineer Regiment's *Warrior* during Ex *Iron Anvil 03*

Previous Best Practice

The traditional "separate" approach of an SHQ supporting a BG HQ is that the OC collocates with the BG CO in his BG Tactical HQ (BG Tac), the Squadron 2IC controls the squadron from its centre of mass and the BGE runs the engineer cell in BG Main HQ (BG Main). The problems associated with this method are: the Squadron 2IC moves independently in a signature vehicle with no protection, he is unable to control the squadron when mobile and can find himself mobile at the same

Preparation of an NEB for demolition during the live firing phase of Ex *Iron Anvil 03*.

time as BG Main thus leaving the squadron without a controlling HQ. Further problems include the reduction in the 2IC's situational awareness and battle procedure time due to being separated from BG HQ. The alternative approach adopted by 5 Field Squadron was for the SHQ to be fully integrated into BG HQ. In this "integrated" approach the OC is embedded within BG Tac as ptreviously, the BGE within BG Main HQ (also known as Main A) and the Squadron 2IC in BG Step Up HQ (also known as Main B) with the BG 2IC. When stationary, during planning phases for example, all these elements collocate and form what looks like a company size position. 1 PWRR BG referred to their HQs as Main and Step Up rather than Main A and Main B and this terminology will be used throughout this article. I witnessed the traditional separate approach with 11 Field Squadron during Exercise *Iron Anvil 02* and it was also used by 3 Armoured Engineer Squadron (5 Field Squadron's sister CS Squadron in 22 Engineer Regiment) during the 2003 training year. The adoption of an integrated approach arose from discussions early in the training year between the CO and OC. These discussions highlighted the difficulties faced by the OC, 2IC and BGE in terms of providing both effective Command and Control (C^2) and engineer advice to the BG, on a sustainable twenty-four hour a day basis. The additional captains provided at War Fighting Establishment (WFE) would not be present during the training year and indeed, in these busy times it was considered prudent to assume they would not be forthcoming even for high intensity war fighting operations. It was suggested that the Squadron adopt the model proven by Regimental HQ in the way it integrates into Brigade HQ. It was believed that integration would improve the full and timely flow of information and intelligence into SHQ, especially relevant during periods of radio silence. It was anticipated that integrating SHQ in BG HQ would increase squadron tempo by removing the need for squadron battle procedure and orders to follow sequentially after BG orders. Integration would allow this battle procedure and subsequent orders to occur concurrently with squadron orders. Squadron orders would be issued as part of BG orders with troop commanders in attendance, in a similar manner to brigade orders, which include engineer regimental orders and to which OCs and BGEs attend. By doing so the OC predicted he might actually be able to get some sleep! This default setting would be flexible, based on the nature of the operation and would allow the OC and 2IC to be able to break clean and establish an Engineer HQ if necessary. It was anticipated that this would bring significant advantages; primarily the provision of the best advice possible to the BG, the rapid dissemination of orders and better situation awareness for the Squadron. By collocating the 2IC and BGE during the planning phase and for protracted static operations such as the defence, it would also be possible to provide twenty-four hour a day manning of SHQ.

Methodology

This article will analyse the two different solutions, separation and integration, to providing both Engineer advice and squadron C^2. The two approaches will be compared against the following questions: who can give the best advice to the BG? Where is the best place to control the squadron? Lastly, how can sustainable twenty-four hour manning be achieved at Unit (peacetime) Establishment (UE)? Clearly, many other factors are involved which are outside of the squadron's direct control; these include the manning level of the relevant BG. In this case 1 PWRR were able to effectively man Tac, Step Up and Main HQs on a twenty-four hour a day basis. The nature of BG personalities is also important; CO 1 PWRR was very inclusive and 2IC 1 PWRR was keen to have engineer input into his Step Up HQ. The ability and manning of the squadron's own HQ and signals sect is also

important; a good team of command, control and communication systems (C^3S) operators, led by an experienced Cpl can be invaluable to the BGE in terms of being able to not only run the C^3S side of the engineer cell but also assist in providing engineer products. Without such a team the BGE can be distracted from his primary role of advising the BG. It will be interesting to see what effect the introduction of the BOWMAN system has on C^3S manning levels and the distribution of information and engineer products within the BG.

Sound Advice

Let us consider the question of who can best give advice to the BG. Clearly the OC is the principal source of engineer advice, particularly during the planning phase. However, when unavailable the next most experienced officer is the Squadron 2IC. As a senior captain he or she will probably have previous experience of BG level operations and be able to use this experience to assist the BG staff when not required to do Squadron planning which remains their primary function. However, the BGE remains responsible for developing the Intelligence Preparation of the Battlespace (IPB) products in conjunction with the BG Intelligence Officer and for preparing the ground paragraph of orders. A potential disadvantage of the squadron 2IC becoming involved in BG matters is that he or she could loose focus on non-BG related Squadron issues, such as those Squadron assets working outside of the BG Area of Operations (AO). It is also easy for the OC, 2IC and BGE to become absorbed by the BG (especially around the bird table) leaving no officer to control the Squadron and generate the concurrent activity that integration permits. Due to the different timescales of Squadron and BG battle rhythms this can become a critical factor, particularly in defensive operations. Another disadvantage is that whilst the BGE is a permanent BG asset who can be detached from the Squadron for long periods to participate in all the build up field training and command post exercises, the OC and 2IC cannot.

Location

The next critical factor, as every good property programme would have it, is location. From where is the best location to control the Squadron? The traditional approach would put the Squadron 2IC at the centre of mass of the Squadron hide. During the planning phase this meant that the Squadron 2IC was able to directly control the refurbishment of the Squadron and track all Squadron assets by being located in the Squadron hide. A task made significantly easier by the close proximity to the troops themselves. In offensive operations and the advance to contact the traditional approach would probably mean the Squadron 2IC advancing in bounds behind the lead troop or troops. Being able to move independently, the Squadron 2IC was able to move to locations of his own choosing in order to maintain communications with distant callsigns, typically reconnaissance sergeants at the front and echelon call signs further back. Another advantage of being independent is that should communications fail, or the tactical situation require it, the 2IC could move to a position of visual contact with vital assets. Moving independently also allows the 2IC to plan his or her movement around the engineer battle picture. Controlling the squadron whilst mobile is near impossible meaning moves had to be anticipated and coordinated in advance of key events such as obstacle crossings; being independent permits such movement. BG HQ, by contrast, would often want to move during such key times for the squadron. However, one of the key problem areas in moving independently is that of protection. Being a high pay off target mounted in a signature vehicle, the Squadron 2IC was frequently killed due to the lack of protection afforded by his AFV436.

The integrated approach allows the squadron 2IC to join the BG 2IC in his Step Up HQ. Step Up HQ normally consisted of the BG 2IC's Warrior, and representatives from the Offensive Support (OS) and Comms Ops cells, in this case OC Mortar Platoon in a CVR(T) Sultan and OC Signals

An AVLB launching a No 10 bridge during Ex *Iron Anvil 03*.

Platoon in a CVR(T) Spartan. Thus the 2IC's AFV 436 is protected by the superior firepower of the BG 2IC's Warrior and the additional security provided by the other vehicles in Step Up HQ.

The BG Standard Operating Procedure (SOP) was for Tac, Step Up and Main to form three roughly platoon size groupings that together imitated a company position. This helped deception and maximized manpower in terms of radio manning and protection. During the planning phase and protracted static phases such as defensive operations, the Squadron 2IC parked his vehicle with Step Up HQ and then personally joined Main HQ with line linking all three HQs. The advantages of the Squadron 2IC joining Main are several. Firstly, notwithstanding the OC, the BG receives the best possible advice the Squadron can offer. Secondly, the 2IC is involved in the planning process right from the start and can therefore cue up logistic support and re-task organize the Squadron earlier. Thirdly, some degree of twenty-four hour manning can be achieved, particularly for C^3S operators. One of the disadvantages of the squadron 2IC joining BG HQ for the planning phase is that asset tracking is made more difficult as the 2IC is detached from the Squadron centre of mass. Although the passage of information between the OC and 2IC is speeded up, the gap is shifted to the Tp Comds who then have to come into BG HQ for squadron orders, which are integrated into BG orders. Further disadvantages are that the OC, 2IC and BGE are all collocated and thus vulnerable, also BG Main HQ can become very busy with engineer vehicles; much to the annoyance of the BG RSM. This can be alleviated by the use of the stood down 2IC's vehicle as a squadron RV.

A laden TBT and AVLB in the morning mist during Ex *Iron Anvil 03*.

During the advance and offensive operations Step Up HQ would leap frog with Main HQ. The advantages of the Squadron 2IC joining Step Up for this phase are that the Squadron always has a controlling HQ, the BG 2IC is able to call on the Squadron 2IC for immediate engineer advice and liaison during the battle and if Tac or Main HQs are destroyed, Step Up is fully ready to control the whole BG without waiting for the Squadron 2IC to arrive.

Twenty-Four Hour Manning

The last factor to be considered is that of achieving sustainable, twenty-four hour a day, manning of SHQ. The traditional approach is for the 2IC to run SHQ alone. The 2IC becomes very tired very quickly, a problem exacerbated at BATUS by the fact that engineer work continues throughout maintenance and refurbishment periods in the form of stripping out work and reconfiguring engineer resources. The BGE is largely able to adopt the battle rhythm of BG HQ and although incapable of sustained 24 hour manning, an adequate level is possible given detailed briefings to a competent crew. The (perhaps exercise) reality that engineer work often starts when BG work stops and vice versa means that Squadron and BG battle rhythms are usually so offset that both the OC and BGE are routinely required by either the Engineer CO or the BG CO so that prolonged rest becomes impossible. The advantage of the Squadron 2IC joining the BGE for the planning phase is that some degree of redundancy is obtained. Although often both the 2IC and BGE may be busy at the same time, it is possible for one to rest while the other holds the fort during the less busy periods.

One of the additional factors to be considered when comparing these approaches includes the effect of radio silence. During Exercise *Iron Anvil 03* radio silence was frequently imposed. As a result each sub unit used runners to communicate with BG HQ. Being collocated with BG HQ meant that the squadron 2IC was far more aware of the battle picture and BG plan, than the use of runners would have allowed.

Previous best practice was for the BGE to control those Squadron assets that were involved in direct CS engineer tasks within the BG AO and for the Squadron 2IC to focus on the remainder of the Squadron. This however, contravenes Corps doctrine which is that the Squadron 2IC should control all Squadron assets. The Land Warfare Centre's Combined Arms Tactics Division (CATD) teaches that the control of engineers within the BG should come from BG HQ, not a subordinate, less well informed HQ. CATD proposes that the BGE should control all engineer assets within the BG AO. As most of the Squadron is located within the BG AO it is hard to see what role the Squadron 2IC would perform in controlling the Squadron if he was not integrated into BG HQ. However, it also remains that in order for constant control to be maintained it is necessary for the squadron 2IC and BGE to share control of the whole squadron. This is especially true when one or the other is moving. Only by both the squadron 2IC and BGE having good situational awareness and adopting slick handover procedures can continuity be maintained. Such efficient handover procedures were perfected during Exercise *Iron Anvil 03*, but took some time practising.

One of the main problems experienced by 5 Field Squadron during Exercise *Iron Anvil 03* was that the BGE was in control more frequently than the Squadron 2IC. Although outwardly this does not present a problem, the BGE can get very focused on those call signs that are directly involved in BG related missions and can, at busy times, loose sight of the bigger picture; however this should reduce with practice.

BG SOPs, dictated that Step Up HQ tended to spend a great deal of time on the move, close to the forward line of own troops. Even when static, it would very rarely adopt the cruciform-around-the-bird-table layout familiar in Main HQ. As a result the Squadron 2IC would often spend a great deal of time enclosed in his vehicle whilst Step Up moved slowly around the battlefield. Due to the Squadron 2IC's FV436 having a large and distinct signature, it attracted enemy attention to Step Up and being the least mobile vehicle it was often destroyed in the early stages of a mission. Giving SHQ command variant Warriors could alleviate this problem and would give SHQ the same levels of mobility, protection and firepower found in the rest of the BG. However, mounted in a FV436 the squadron 2IC was often left either dead or too tied up in the movement of Step Up to control the Squadron effectively.

Fundamentally the significant advantage of integrating the Squadron 2IC into BG HQ was that the 2IC was involved in the planning process right from the start. As well as dramatically increasing the 2IC's situational awareness this negated the need for a separate Squadron Orders Group to be held. Instead the OC normally choose to gather the 2IC, QM and troop commanders together after BG orders to add detail to the engineer plan and answer any questions. Thus overall battle procedure time was saved and tempo increased. This became particularly important as the BG frequently held very last minute orders groups.

Alternative solutions to the problem of how best to control a CS Squadron at UE might include the use of SNCOs in either the BGE cell or SHQ; dare I suggest it, we could look to the Royal Artillery model where they employ experienced SNCOs throughout their C^2 cells. In the case of 1 PWRR BG Main, the OS cell was run by a highly experienced warrant officer, and a staff sergeant assisted the Battery Commander.

Conclusion

During the 2003 training year, 5 Field Squadron adopted a previously untried solution to the problems of the C^2 of engineer assets in direct support of a BG. At the beginning of the training year it was decided that SHQ should integrate with the Main Effort (ME) BG HQ in the same way that RHQ integrates with Brigade HQ. The key difference to the traditional approach was that the Squadron 2IC, by default, joined Step Up HQ. From this location he was able to advise the principal member of the BG staff, namely the BG 2IC. He was also able to maintain situational awareness with greater protection and firepower by being part of Step Up HQ. Despite several problems including the maintenance of communications and supporting any second BG (something that future Corps Structure rectifies), this new integrated approach was deemed to be highly successful by the Regiment, BG and Squadron. By integrating SHQ into BG HQ all round battle procedure time was condensed, and situational awareness and tempo improved. The Squadron was able to react at short notice to changes in both the situation on the ground and the detail of the mission. My CO now recommends the full integration of SHQ into the Main Effort BG HQ for future exercises and operations.

On a more personal note, I think that the integration of SHQ into BG HQ proved successful. Certainly very much more successful than I for one had anticipated. Having worked with separate HQs on Exercise *Iron Anvil 02*, I was circumspect to say the least about moving the squadron 2IC into BG HQ. My reservations were based on my belief that the 2IC would find it very hard to control the squadron from within BGHQ and that I might feel somewhat undermined as the BGE by the presence of another engineer captain in BG HQ. I was however, acutely aware of the benefits of integration, particularly in terms of the ability to provide twenty four hour manning and I felt that integration definitely offered the opportunity for more people to get more sleep. This can only be a good thing as sleep is a subject very close to my heart! In practice, I found my reservations misplaced and having the squadron 2IC close to hand meant I had a sounding board for my own ideas when the OC was not present. Although the occasions when the 2IC was killed off during an early part of a mission leaving me to carry out the functions of both 2IC and BGE, may have added a grey hair or two to my head!

Come on now. Own up

CAPTAIN D M BRANCHER PHD FRSA

David Brancher was in the post-war engineering programme and served four happy years on major projects in Germany. After a spell in local government, he moved into universtity teaching and research, and was a visiting professor in many countries on behalf of UNESCO. He founded the Partnership Trust to improve university teaching and is now retired and living in Monmouthshire. He has contributed a major article to The Journal in April 2001*,* (Engineering Versatility and the Corporate Culture*). The astonishing history of the Corps provides him with endless fascination.*

My wife and I had flown up to Orkney on holiday. One day we were passengers in a minibus on Hoy when suddenly I asked the driver to stop and leapt out with my camera, muttering something about a badge. The object of the trip was archaeology, but the focus had shifted forward by 4000 years...

It was in 1812 that Graeme Spence, Maritime Surveyor to Their Lordships the Lord Commissioners of the Admiralty, recommended that Scapa Flow be adopted as the Royal Navy's northern roadstead. It would, he claimed, cover the north-about routes of a potential enemy sailing from Russia, Sweden, Norway, Denmark, Flanders and Holland.

Looking across the Flow can be like looking across the English Channel. In WW1 its expanse provided a home for line upon line of battleships, battle cruisers, cruisers, destroyers, monitors, torpedo boats and minesweepers. Weaving through the vast fleet would be colliers, oilers, store and ammunition ships, tugs, armed trawlers and drifters, mail boats, boom defence vessels, admirals barges and liberty boats. Even then there was space left over for target practice with six inch guns and torpedoes.

In May 1916 the patience and the practice bore fruit when the Grand Fleet sailed from Scapa and Invergordon to join battle with the High Seas Fleet at Jutland. It was said that Admiral Jellicoe could have lost the war in an afternoon. Although the Royal Navy's losses were the greater, the German fleet never ventured out again.

A month later the cruiser HMS *Hampshire* left the western approach carrying the sapper Field Marshal Lord Kitchener on his ill-fated voyage to Russia. She sailed up the west coast of Mainland in weather so heavy that the destroyer escort could not keep up and turned back. She then hit a mine, virtually everyone drowned and the conspiracy theories live on to this day. (One, would you believe, is that Kitchener was not on board and reappeared as Joe Stalin. There is a certain resemblance, perhaps. And, after all, the Corps did produce three Viceroys of India).

A year after the *Hampshire* went down HMS *Vanguard* blew up with the loss of over seven hundred lives, the result of the spontaneous combustion of cordite. After the armistice the German High Seas fleet sailed into the Flow to surrender, pending a peace treaty. Many of the ratings mutinied and were sent home. When the commanding admiral was under the impression that the peace treaty might not be signed, and that the fleet would fall into British hands if the war were resumed, the skeleton crews were ordered to scuttle their ships. The salvage of the wrecks, interrupted from time to time as the price of scrap fluctuated, had hardly been completed when war was declared in September 1939.

A month later, on 14 October 1939, U47 crept through Kirk Sound in the eastern approach, through a gap which was due to be closed with a block ship which had sunk en route. She sank the battleship HMS *Royal Oak* and 833 died. To prevent a recurrence Winston Churchill, then First Lord of the Admiralty, ordered the construction of the barrage now named after him, to link the chain of islands on that side of the Flow.

During WW2 the tonnage of Royal Navy in the Flow was not on the scale of the previous war, but the importance of the base was hardly less. From Scapa sailed many of the escorts of the Atlantic convoys, the dangerous and occasionally disastrous Arctic convoys and the expeditionary forces heading for Norway and many commando operations.

At all times there was the risk of another submarine incursion or an assault on the bases around the Flow. There was the risk of aerial surveillance which could have spelt the end to many a convoy or provided warning of another invasion of Norway. And so there were not only the naval bases engaged in repair, victualling, ammunition and fuel storage, signals and the holding of reserve crews. There were fighter and bomber stations and radar sites, AA gun sites, coastal batteries, searchlight units, barrage balloons and the troops to repel raids or a full-scale invasion. Orkney was a busy place for all three services. It was also a miserable place for those on the more remote searchlight and gun sites, coastal batteries and signal stations.

The Garrison Theatre, Lyness . . .

. . . and the revealing detail.

The base at Lyness, on the eastern side of Hoy, was the home of thousands of sailors, soldiers, Wrens and ATS. At the outset the project was the responsibility of the Admiralty Civil Engineering Department. By the end of 1940 the work was behind and the Navy moved in a Royal Marine Labour Battalion which was again replaced by civil labour in 1942. The Wrens arrived in 1943 and lived at what was called Haybrake Camp, serving as drivers, clerks and radio and telephone staff.

The closure of the base started in 1944. The *Bismarck* and *Tirpitz* had been sunk and the battle of Atlantic had been won. It is difficult now to appreciate the scale of the vast establishment. There remains an oil storage depot, converted to a museum, and an enormous corrugated iron shed on the scale of a large aircraft hangar. Originally erected for the salvage and scrap operations between the wars it became what was said to be the largest cinema in Europe. The many hundreds of huts of the base are largely gone. At the end of the war, apparently, the farmers were offered the choice of having the sites cleared or accepting the buildings *in situ*. Many of them were dismantled and some of them ended up housing refugees across Europe.

At its peak, the population at Lyness was at least twenty thousand. Elsewhere in Orkney, on the remote gun and searchlight battery sites across the islands, the wretched lonely soldiers might get their mail once a week. For many of the warship and aircraft crews the pattern of existence would have been that pertains in most wars – mind-numbing boredom interspersed with periods of intense fear. The problem of morale must have been immense, especially during the long northern nights and endless gales.

The base had its own newspaper, the *Hoy Polloy*, reporting the visits (and promises of visits) by the entertainment celebrities of the day. Amongst those who appeared in the vast corrugated iron cinema were Gracie Fields, George Formby, Vera Lynn, Flanagan and Allen, Nat Gonella, Yehudi Menuhin and the touring companies of ENSA. But that was not the only venue at which they appeared.

Malcolm Brown and Patricia Meehan in *Scapa Flow* (Pan Books 1968) tell us that the cinema was opened in February 1940, but "later a Garrison Theatre was built on the road between Lyness and Longhope – a huge Nissen hut with a frontage like a real cinema in civvy street"

In fact there were two large-span Nissen huts, known as Romney Huts, side-by-side, connected to the rear. One had a raked floor and a projection box, for use as a cinema or theatre and the other had a level wooden floor and was the dance hall.

Who then designed the imposing building through which the punters passed? Perhaps the flaming grenade tells its own story. Here the imagination takes over. An architect or engineer, finding himself a wartime sapper on what was essentially a naval base and possibly under the control of an Admiralty official, sees two heaven-sent opportunities. One is to make a cheeky gesture at the Royal Navy on behalf of the Corps. The other is to demonstrate his mastery of *Art Deco* – perhaps an ambition frustrated in civil life before the war took him to Orkney. Who knows?

Researching wartime Orkney is not easy. The leakage of information, of any kind, might even have determined the outcome of the war and the wartime newspaper, the *Orkney Blast*, was obviously under heavy censorship. Non-operational events are mentioned but construction is never reported. Here and there, however, there may be clues and false trails. For example the issue of January 30 1942 reports a leaving party for a Major L.Davidson RE, at CRE Stromness, across the water from Lyness. "Lieutenant Colonel. D. Bathe sang two songs, one in the Orkney dialect, and 'Phil the Fluter's Ball'. S/Sgt Twigg sang songs and Lieutenant. H E Bond RE was MC".

Whoever the builders may have been, their place in architectural history is secure. *Orkney – An Illustrated Architectural Guide* (RIBA Scotland 1991) has the following entry. "Longhope: Garrison Theatre ca 1942. The art deco black-rendered brickwork and white banded windows of this frontage disguised the huge nissen hut [sic] which stood behind. With more than 20,000 service men and women stationed on this island in 1943 and the bleakness and remoteness of the posting, the provision of entertainment was essential. It is now a guest house". [In fact it has reverted to a private house since the publication.]

There are more momentous questions for the serious historians of the Corps. But still that flaming grenade faces the grey expanse of the Flow and the ghosts of two world wars. One senses the laughter, loves, hopes and fears of the service men and women who passed through the doors below it, on a precious night out. Its origins may have to await some fragments of family history or personal reminiscence, prompted by this brief note.

Force Engineering Iraqi Style
62 Works Group Royal Engineers on Operation Telic

COLONEL J F PELTON MBE BSc(Eng) MA FICE CEng ACGI Euring

Colonel John Pelton commanded 62 Commander Royal Engineers (Works), renamed 62 Works Group Royal Engineers in 1st December 2003, from March 2002 until September 2004. During that time the Works Group completed operational tours in Afghanistan, Bosnia and Kosovo. However, its most significant deployment was to Iraq during the period July 2003 to Mar 2004 covering Operations Telic 2 *and* 3. *Colonel Pelton has since returned to the staff as the Colonel Plans within the Adjutant General's Headquarters at Upavon.*

Introduction

The war fighting phase of Operation *Telic* has been extensively covered by previous articles. However, a significant British military presence has remained in Southern Iraq and so the demand for Royal Engineer support to sustain the Force has continued. A key element of this support has been the construction of the infrastructure, specifically camps and the associated facilities, to the standard now established for operations in the Balkans, Afghanistan and elsewhere. This article describes how 62 Works Group Royal Engineers contributed to the delivery of the required operational infrastructure and specifically the construction of accommodation camps for the Force.

Preparation

Planning for the follow on forces began even as the 1st (United Kingdom) Armoured Division was crossing the Kuwaiti border. 62 Wks Gp RE was four months into a Training Year[1] but was the only Works Group not already committed to operations. 62 was, therefore, warned to replace 64 Wks Gp RE which was already deployed in Iraq. Initial planning was based on 62's regular specialist teams, 519 and 523 Specialist Team Royal Engineers (Works) (STRE (Wks)), together with elements of 521 Specialist Team Royal Engineers (Water Development). However, 519 STRE (Wks) had only just returned from the Balkans; the last clerks of works had returned to Chilwell in May 2003. Therefore, Headquarters Royal Engineers Theatre Troops initiated the mobilization of a Territorial Army (TA) specialist team, 508 STRE (Wks) (V)[2], to replace a regular team in the 62 Wks Gp RE operational order of battle. This was the first time ever that a full TA specialist team had been mobilized for operations and it brought considerable civil and commercial experience of project and contract management to the Works Group. 508's mobilization also created time for 519 STRE (Wks) to recover from its previous deployment, work itself up for Iraq and carry out a complete pre-deployment training package. The Works Group organisation was completed by the addition of a slice of the Military Works Force echelon, later augmented by further regular and TA personnel, and a small team of civilians from Defence Estates (DE). The latter brought much needed contractual and operational experience to the Works Group Headquarters. The deployed organization is shown at Figure 1.

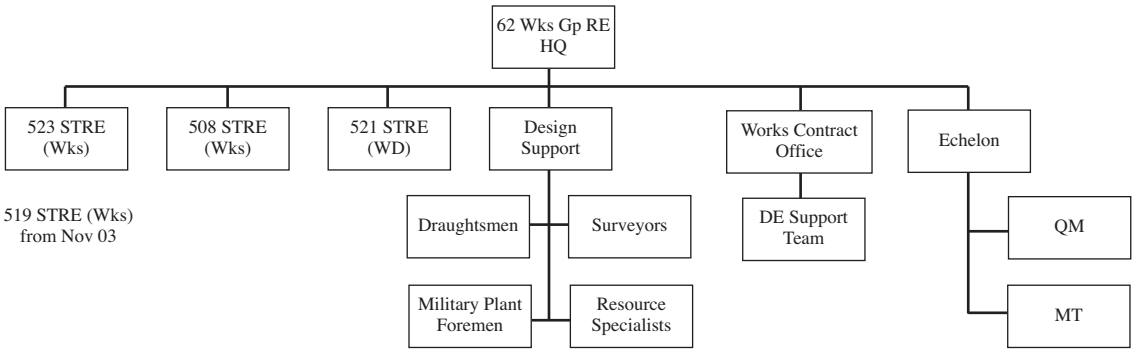


Figure 1 – 62 Wks Gp RE Operation *Telic* organization

[1] The first year of a three year cycle and intended to bring the unit to a high level of readiness for operations during the second year of the cycle, the High Readiness Year, which is then followed by an Other Tasks Year.
[2] The (V), Volunteers, suffix was dropped on mobilization.

Deployment

62 Wks Gp RE took over from 64 Wks Gp RE in Iraq on 11th July 2003. 64 had put together a nascent maintenance organization for the British military camps before leaving theatre. 523 STRE (Wks) took on this task making use of its wealth of recent operational experience. All the regular clerks of works were thus tied up commanding maintenance teams across the British area of operations leaving a small Team HQ comprising the Officer Commanding, the Second in Command and one of the Garrison Engineers. This group rapidly became engaged in project management of two major projects: Temporary Deployable Accommodation (TDA) which involved the construction of some 4,125 bed spaces worth of tented camps and the Baghdad Support Unit which involved the provision of Tier 2[3] camp facilities for the 250 or so British Service personnel working in Baghdad. In both cases the contractor was Kellog Brown and Root although working under quite different contractual arrangements in the two locations. This left 508 STRE (Wks) to carry out all the design work, in itself a significant task, as well as looking after the construction of the Temporary Field Accommodation project. The Temporary Field Accommodation camps, 3,500 bed spaces worth of accommodation had originally been constructed in Kosovo in 1999/2000, but had been dismantled and shipped to Iraq.

Tier 1

On deployment the mid-day temperatures were already reaching around 50°C rising to the high 50's by mid-August. Therefore, the first task was to provide protection for British troops from the extreme heat of the summer weather as fast as possible. This could only be achieved with tented camps, that is Tier 1 accommodation. To meet the demands of such a large force it was decided to deploy a newly procured camp system known as Temporary Deployable Accommodation camps, despite the system not yet having undergone field trials. These camps comprised standard thermally insulated and air conditioned semi-circular shaped tents (Figure 2).

Figure 2 – Temporary Deployable Accommodation Camp standard tent under construction.

Figure 3 – 500-man Temporary Deployable Accommodation Camp at Basrah International Airport.

The tents were grouped into "lines" which provided eight tents each accommodating eight people, together with separate tents for showers and flushing toilets. Larger tents provided dining rooms, gymnasium, welfare tents as well as stores and workshops. The whole was set out in a standard pattern grid which was fed by water, power and sewerage delivered or collected by package plants included within the camp (Figure 3). The package even included fire alarms and walkways. Construction of the first camps was already under way in July and after some delays with the first batch, principally due to the contractor learning how to construct the complicated camp services, work proceeded largely to plan. There were problems, specifically with the kitchens and dining areas which had been under designed[4]. Resolving these and the inevitable series of site specific and other difficulties arising from construction in such an environment required on-site decisions. This caused some difficulties as the camp system was still "in procurement" and any variations inevitably translated into additional costs to the programme. The Defence Procurement Agency did their best to deploy personnel from the Integrated Project Team which certainly eased the resolution of on-site problems. However, in the end the operational imperative to deliver air conditioned accommodation drove the programme. The final camp was handed over in Oct 04 thus completing the delivery of 4,125 bed spaces in air conditioned tents with flushing toilets, hot showers and catering and welfare facilities within six months of the end of hostilities. The consensus of those who occupied these camps was that they were an excellent solution. The air conditioning struggled at times with the mid-day heat: however, the camps provided showers, flushing toilets, cooled accommodation and were highly rated.

As the Temporary Deployable Accommodation progressed the Works Contract Office within the Works

[3] Tier 1 refers to tented camps, the "get you in packs": Tier 2 refers to a hard walled temporary cabin style of construction providing improved facilities for longer term occupation.

[4] Although an interim solution was developed it is an area that will require further attention to avoid similar problems on future operations.

Group Headquarters began to test the water with local Iraqi contractors. By using a series of small construction projects, for example roofing and concreting tasks, the Works Contract Office began to build up a head of steam and to develop a good feel for what the local contractors could achieve. The contracts team was led by a senior Garrison Engineer, the Works Contract Officer. Following the Strategic Defence Review he is now supported by a WO1 clerk of works who proved to be a vital asset in coping with the contract load. However, the real power of this small group was created by the synergy of integrating these two Royal Engineers with the small, three man, Defence Estates team. The latter included a commercial officer who was authorised to handle multi-million pound contracts compared with the £50,000 authorized for the Works Contract Officer[5]. The Works Contract Office's chance came as the first heat casualties began to mount in the field hospital. Many British troops were accommodated in converted buildings and these needed air-conditioning. There was also a need to role out air-conditioning to those camps not due to receive Temporary Deployable Accommodation until the end of the programme. The contracts team set to work and within eight weeks of arriving in theatre, that is by the 5 Sep 03 they had installed 2,522 air-conditioners, approximately one for every four personnel in theatre, including the 14MW of power generation necessary to power them and all achieved using local contractors[6].

Figure 4 – Temporary Field Accommodation parts stockpiled at Shaibah Logistics Base.

TIER 2

HAVING established its credentials within Iraq and Kuwait the Works Group was presented with a further challenge. The tents were excellent but were not intended as a longer term solution. British military infrastructure doctrine[7] also posits an enhancement from Tier 1 to Tier 2 as the operation evolves from a new theatre into a mature theatre. Therefore, in parallel with the construction of the Tier 1 camps and the efforts using contractors to improve the in place structures to an equivalent standard, work began to develop Tier 2 facilities. In some cases this involved minor improvement to existing structures, whilst in others more major developments were required. However, the main effort was directed towards constructing the Temporary Field Accommodation camps in order to provide 3,500 bed spaces of accommodation at the two main British bases in Iraq, Shaibah Logistics Base and Basrah International Airport. A far sighted decision by the Infrastructure branch within the Permanent Joint Headquarters in early 2003 together with some energetic dismantling work in Kosovo meant that the first ship loads of Temporary Field Accommodation stores began arriving at Shaibah Logistic Base in July 2003 (Figure 4) at the same time as 62 Wks Gp RE was deploying to Iraq.

The Permanent Joint Headquarters' initial plan was to tender the contract for the construction of the Temporary Field Accommodation to a single UK contractor. The requirement was challenging: to construct seven camps from scratch by 31 Dec 03, that is within five months of the contract being let. As negotiations progressed it became apparent that a UK based contractor with no foothold in theatre would not have the agility to mobilise, develop its local subcontractors and its supply chain in time to meet the requirement. There was also a, natural, thread of risk aversion which began to push the costs way above the available funding[8]. Time was beginning to slip away and it was, therefore, decided to bandon the UK contract approach and that 62 Wks Gp RE should take on the role of prime contractor instead. 62 was surprisingly well placed to do this: it already possessed considerable knowledge of Temporary Field Accommodation having previously supervised both the maintenance and the subsequent dismantling of the camps in Kosovo during 2002 and early 2003; the Works Contract Office had developed considerable confidence in and knowledge of local contractors; and the TA possessed commercial contract management experience. There was still significant risk compounded by the loss of six precious weeks due to the single tender negotiations. However, by the end of Aug 04 the 'in house' strategy was approved and work could begin.

Some time was recouped by building the to the same design layouts as for Kosovo. Indeed the only difference to the untrained eye is the addition of sunshades – a real case of deja vue for some future occupants with Kosovo experience. To minimise the risk of a contractor failing the project was broken down into a series of discrete packages, including:

- The camp bases/foundations. Three of the camps were sited on existing asphalt/concrete surfaces. However, the remaining four camps required bases to raise them above the expected winter

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[5] Subsequently increased to £250,000.
[6] The contract strategy involved a mixture of "lump sum" and "call off" contracts let by competitive tender in accordance with MoD contracting procedures.
[7] Joint Warfare Publication 4.05.
[8] It was estimated that costs might rise as high as £49M compared with the £27M available for the project.

flood level. In the absence of any form of locally won rock fill a material referred to locally as "gatch", a mixture of sand, silt, clay, salt and some stone, was used. The local contractors were adept at placing and compacting it to produce a hard surface with California Bearing Ratio readings in the order of 70 – 90 per cent. The material fared less well in the wet unless protected, a problem which affected the final stages of the works.

- Sorting and moving the Temporary Field Accommodation stockpile to the respective sites. There were six ships worth of stores and equipment, the equivalent of over 1,000 ISO[9] containers which covered 26 acres when off loaded into the storage area at Shaibah. A local contractor brought in 10 cranes and 20 trucks, moved the stores to site, placing many components directly into the correct place on the site and delivered a computer database of every camp component.
- Erecting the 1,800 accommodation cabins. The cabins had been dismantled and "flat packed" in Kosovo. These standard kits were erected by a local Iraqi contractor for the total sum of $45,000. His work was by no means perfect but for that price we could afford to sweep up behind him.
- Building the communal facilities, that is dining rooms, welfare facilities and offices. Once the Iraqi contractor had understood that the base had to be level for the building to be successfully bolted together the frames were quickly erected and many of the original components salvaged or utilized in some way. These units had travelled less well than then the accommodation cabins and subsequent contracts had to be let to line them internally throughout with plaster board, to fully rewire them and to waterproof the roofs of all seven camps worth of buildings.
- Installing the services. At around £9M, this was the largest contract as well as being the most critical and involving the most complex aspects of the camps. A Kuwaiti contractor won the contract and, whilst relying on a largely Middle Eastern workforce, used specialist subcontractors from the UK and elsewhere to instal, test and commission the various systems. The electrical testing and commissioning in particular proved a greater than expected challenge. The contractor took some persuading that UK standards must be applied: for example switching on a circuit was inadequate for commissioning. Eventually the contractor found that the only way he could meet the requirement was to hire electrical engineers from the UK.
- Over-roofing to provide protection from the sun (Figure 5). This innovative solution was developed from a standard design employed by another Kuwaiti contractor. The system involved a steel support frame either anchored in concrete blocks or bolted to an existing surface and supporting a curved profile sheet roof. The roof was manufactured on site from drums of sheet steel fed into a rolling machine which both induced the profile and the curved shape. A clerestory was fabricated in the centre section of each roof to promote cooling convection currents beneath the sun shades during the summer hot weather. Very large span over rooves were erected over the larger buildings although there were delays when supplies of the heavier gauge steel sheet required for the longer spans had to be imported from Korea.
- Asphalting of vehicle movement areas on the "gatch" bases. Although the full potential of the rainy season was difficult to appreciate in the middle of the summer, the local advice was that off road vehicle movement would not be possible. Therefore, access roads and parking areas on the "gatch" bases were paved with asphalt placed directly onto the tack coated compacted "gatch".

Figure 5 – Temporary Field Accommodation units being over-roofed.

The Works Contract Office's knowledge of local contractors and efficient use of competitive contracting for lump sum contracts, together with appropriate contractual delegations allowed a very fast turn around on the early contracts. The first work started in late Aug 03 and by late September the camps had begun to take shape as the accommodation cabins were erected. Concurrently the larger and more complex contracts, and in particular the utilities contract, were put together and tendered. The first delays began to bite during September. Some local contractors were struggling with the technology and the need to motivate them to complete work to standard and on time characterised the remainder of the project. However, judicious control of payments, insistence on standards, the incentive of further work (potentially millions of pounds at that stage) and at times sheer force of personality kept the project largely to time. Unexpectedly the locals decided to fully exercise their new found freedom by taking very extended religious holidays at every opportunity. The festivals of Eidh and the Haj both became two week affairs although Ramadan had surprisingly little impact on progress. However, the delays combined to push the latter stages of the project into the wet season. As 508 STRE (Wks) came to the end of their six month tour and handed over to 519 STRE (Wks), three times the normal January rainfall arrived. Nevertheless worked progressed and in spite of all adversity the first camp, Trenchard Lines Shaibah Logistics Base (Figure 6) was handed over and occupied at the end of January 2004, a month later than originally planned but still five months after the start of works. The remainder were all completed and handed over by early March. The final cost of the project was around £18M which included additional works which had not been anticipated such as asphalt parking and access roads, additional air conditioning, over-roofing of communal buildings as well as accommodation and the dry lining of all the buildings less accommodation units.

Maintenance

The final act for 62 Wks Gp RE was to establish a maintenance system to look after the Temporary Field Accommodation sites and all the other areas of the British camps. At the start of the tour five clerks of works and two

[9] International standard containers typically 20 ft in length.

Figure 6 – Trenchard Lines Shaibah Logistics Base nearing completion, January 2004.

garrison engineers reinforced by around fifty tradesmen from 38 Engineer Regiment maintained the entire estate for 10,000 people spread over 180km and twenty camps. As the situation stabilised a Garrison Engineer deployed as the Property Manager and was tasked to develop local maintenance contracts to begin to release the tradesmen back to the Engineer Regiment. The first of these started to operate in late September with mixed success. An excellent generator maintenance contractor was found, although his success was tempered by the difficulties encountered in trying to manage a legacy contract which had been let by the Headquarters of the United Kingdom National Support Element to a contractor which began to fail. A successful air conditioning contract was also let. However, finding effective contractors at Al Amarah remained problematic due to the dearth of tradesmen and the more difficult political situation compared with Basrah. A short term operation and maintenance contract at Al Amarah was dissolved within weeks of signing.

The reality was that only a large infrastructure maintenance contractor familiar with UK standards and practices could replace the RE maintenance teams, supplemented by *ad hoc* local contract arrangements. Therefore, a Works Repair and Maintenance Contract, essentially a Works Services Manager contract including some of the Establishment Works Consultant tasks was drawn up by Defence Estates and went to tender during late 2003. The contract was awarded to Turner FM on 18 Dec 03 and by Feb 04 sufficient Turner's manpower was deployed to release the RE maintenance teams back to 35 Engineer Regiment. 62's job was to set up the contract and by the end of the tour the bulk of the contractor's personnel were mobilized and the scene was set for 62 Wks Gp RE to recover to the UK at the end of March 2003.

Summary

During 8 ½ months in Iraq 62 Wks Gp RE completed £79M worth of contract work. This included the seven Temporary Field Accommodation camps providing 3,500 bedspaces of accommodation, the second batch of the 4,125 bedspaces worth of Temporary Deployable Accommodation, a new Headquarters for Headquarters Multi National Division (South East) and the Headquarters of the National Support Element. These were supported by roads, water supplies, power, air conditioning and ground works. During the peak period from September to November 2003 the Works Group was routinely employing a workforce of 1,300 despite having no more than 75 people deployed at any one time.

The combined effect of Regular and Territorial Army personnel supported by Defence Estates provided a clear demonstration of the level of Force Engineering that a Works Group Royal Engineers is capable of delivering in an operational environment. It showed that Royal Engineer contract experts can cut the mustard and deliver successful contract management in accordance with Defence Estates practice. It also provided an immensely challenging and satisfying tour for all those involved.

Disaster Reduction Staff Training

LIEUTENANT COLONEL G N RITCHIE

George Newbigging Ritchie was commissioned into the Corps in 1947 after studies at Manchester University and Emergency Commissioned Service in India. Served tours in BAOR with 7th Armd Div Engrs and 35 Fd Engr Regt but most of his regimental service was with the QGE in Malaya and Borneo. In 1974 he was invited by the University of Manchester to join the Dept of Administrative Studies for Overseas Visiting Fellows where he was to spend three years in research into the effects of natural disaster in the developing countries and the implications of this upon the training of public servants. He lectured and taught in these subjects and has been involved through the Commonwealth Secretariat and the United Nations in consultancies and workshops concerning disaster in the South Pacific, India and Bangladesh, Mozambique, China, Nepal and the Caribbean. On retiring he took up an appointment as a Senor Research Scientist at the RMCS where he established and was founding Director of the Cranfield Disaster Preparedness Centre. He is presently Chair of the Board of the Global Association for Disaster Reduction. In 1967 he was awarded the Arthur ffolliott Garrett prize for his article "Airstrip Construction in Borneo".

In the context of this paper "disaster reduction staff training" means all those activities aimed at creating capabilities in threat and vulnerability analysis, planning and management to prevent, mitigate, prepare for, respond to and effect recovery from, perceived natural and man-made disaster threats (industrial, technological, transportation, environmental degradation but excluding commercial disaster, war, terrorism and civil strife) and to integrate these actions with development policies, projects and environmental management and thus achieve effective standards of disaster reduction.

Background

In the late 1970s, research in the Department of Administrative Studies for Overseas Visiting Fellows, Manchester University, examined a wide range of natural disaster events, both rapid (earthquake, cyclone etc) and slow-onset (drought, famine, environmental degradation etc) in developing countries in four continents during that time frame and during which it could be assumed that the countries affected were at comparable states of economic and administrative development. The research at Manchester focussed on the management aspects of response, relief and recovery activities mounted by the governments of affected countries, UN agencies and international non-government organizations with a view to identifying pro-active activities which would reduce the effect of such disaster events. The research was stimulated by experience in East Pakistan (now Bangladesh) when that country was struck by a massive cyclone and sea surge in November 1970 which caused possibly up to 500,000 deaths, not including domestic cattle. There was confusion, incompetence, competition and much evidence of an inability to manage in emergency by all involved. This was apparent in all of the national, international and UN organizations The conclusions and recommendations of the research still hold true in 2004.

In the early 1970s the General Assembly of the United Nations had approved the formation of the United Nations Disaster Relief Office (UNDRO). The inclusion of the description "disaster relief" in UNDRO's title and its connotation with humanitarian action, rather than pro-active prevention and preparedness, was to cause confusion over responsibilities in the UN and in national governments for the next 25 years.

Personal observation, UN agency, newspaper and NGO reports were found to be unsatisfactory in their objectivity. Affected countries' reports, when these existed, were classified and impossible to obtain. Fortunately the research was given access to UK embassy reports from posts in many developing countries where disaster had struck and where major national and international disaster relief operations had been mounted.

These UK Foreign and Commonwealth Office reports provided factual material concerning response and relief operations and of the problems and difficulties which had arisen and in some cases of their subsequent consequences. The events covered by these case studies included:-

Earthquakes in Mexico, Nicaragua, Peru, Morocco and the Philippines
Volcanic eruption in Colombia
Floods in Pakistan and India
Hurricanes, cyclones and sea surge in the Caribbean, India, Bangladesh and the South Pacific
Drought and food shortage in Ethiopia, Somalia, the Sahel countries and in India.

Analysis of these enabled the following overall deductions concerning management aspects of the relief operations to be drawn:-

- In rapid-onset disasters although the event caused destruction, death and injury, the subsequent deprivation, distress and disease suffered by survivors was in large measure the result of overload and failures in government administration and in disaster response and relief logistics systems. There was a general absence of any

form of disaster preparedness planning or effective information and emergency management.
- In slow-onset disasters the causes lay in previous failures of development policies and planning, agricultural practices, health, sanitation and water supply programmes and in overall environmental management.
- Disaster preparedness planning was not practised as an on-going responsibility of governments although clearly its absence was a major factor in the overload of administrations in disaster and of failures in the disaster response and relief operations.
- There was no evidence of hazard impact assessment (HIA) in relation to major development projects nor of environmental impact analysis (EIA) in regard to the affects of development policies and projects on the surrounding social, economic and natural environment.

The focus of the research had been into the management of disaster relief operations but it became clear that the principal deficiencies were in pre-disaster planning and the preparation of disaster preparedness plans by sovereign states. The recommendations outlined below therefore relate to development of this capability and activity in government administrations and in communities and the private sector of disaster prone developing countries.

In 2004, twenty five years later the situation throughout the disaster-prone developing world remains much as it was in the 1970s. Provision of relief materials too often takes precedence over planning and management for disaster reduction and preparedness. This in spite of the millions of dollars expended in training programmes mounted by a range of aid programmes.

Recommended Education and Training Modules

Analysis of disaster reduction staff training (see definition at title above) in the public services of disaster-prone developing countries shows the need to establish the following education and training programmes:-

- Appreciation and Awareness. Political will is indispensable to the initiation of disaster reduction policies. The primary target group for programmes aimed at the creation of political will must be those in senior positions of responsibility at all levels of government from national to community. Political and religious leaders in the community, voluntary and non-government organizations and, importantly, the news media and the private sector must also be included. The aim, to develop awareness and understanding of the relationships between development policy and practice, environmental management and disaster reduction and of the nature and cost-effectiveness of disaster reduction. Opportunities to impart the message should be taken by introducing it into a range of conferences and meetings concerning other subjects (e.g. agriculture, public health, rural development, education, public works, water resources, rural development, governance, etc).
- Staff Training. Disaster reduction and environmental management to be integrated into the curricula of all institutes of public administration (IPA), administrative and specialist staff colleges at both initial and progressive levels of staff training. The subjects must be regarded as on-going responsibilities of all departments of government (generalist administrators, finance, health, public works, agriculture and forestry, water resources, transport, police, military etc). None can be excluded.
- Public Education and Information programmes to be mounted to raise community awareness of the threat and of their responsibilities for disaster preparedness, thus enhancing self-help, self-reliance and community commitment to environmental management and disaster reduction.

Implementation.

In implementation of these recommendations the following are identified as priority activities:-

Priority One. Stimulation and support to national institutes of public administration, universities and staff colleges where staff are trained for the public service in developing countries by the "training of trainers" in disaster reduction.

Priority Two. Provision of advice, from a range of sources, but including experience from other disaster affected developing countries to national governments and organizations in the development of disaster reduction policies, disaster preparedness plans and in the establishment of national training programmes in these subjects.

Priority Three. Research in support of Priorities One and Two.

The Asian Disaster Preparedness Centre and the Cranfield Disaster Preparedness Centre (UK) have been running courses for managers in government, police, defence and emergency services and from NGOs both on site and in country since 1986. Participants nominated for these disaster management courses have, in the main, come from less senior levels of their organizations. In consequence disaster preparedness has tended to become a specialist appointment rather than an on-going responsibility of all heads of department in all ministries of government and organizations which it must be, if comprehensive and effective standards of disaster reduction and preparedness are to be achieved. But it is important, to ensure effectiveness and because Disaster Reduction is the responsibility an all ministries and departments of government, that the focus of training should move to in-country institutes where government staff are trained.

Training Syllabus and Objectives.

The principal training objective of Disaster Reduction staff training is development of capabilities and capacities in:-

- The processes of analysis of disaster threats and vulnerabilities and from this analysis, deduction of the probable consequences to society, the economy and the infrastructure. This with a view to identifying the tasks which will arise in meeting the needs of the situation when disaster strikes, where responsibilities for meeting these tasks should lie and what disaster preparedness measures are necessary and possible.
- The process of participative planning so that all those who will be involved in response and preparatory action are involved in the disaster reduction planning process.
- The requirements of management in crisis and emergency in terms of communications, staffing, information management and working practices.
- Logistics planning and management for the response and relief operation but importantly, also for the recovery programme.
- The relationships between sustainable development, environmental management and disaster reduction and, management of the linkages in government between these areas of responsibility.
- The standard use of Hazard Impact Assessment and Environmental Impact Analysis as development project planning tools.

Education and training material relevant to these modules and syllabuses already exist. Much of the material required is held by the author and others. Most is "action learning" material which involves the participants in using their existing knowledge and experience as managers in the public and private sectors to address new problems. Lecture material relates to new areas of knowledge requirement only.

Comment

It is as yet unclear where the leadership and responsibility for implementation of the International Strategy for Disaster Reduction (IS-DR) lies. National and non-government agencies have begun to take their own initiatives. It certainly seems possible to draw a dividing line between responsibilities for Disaster Reduction through prevention, preparedness and planning for post-disaster recovery in relation to both natural disaster and environmental degradation and those with clearly man-made origins in industrial, technological or transportation accidents and to allocate responsibilities to appropriate agencies and authorities. Responsibilities for response and for relief programmes clearly fall within the remit of both the emergency services and humanitarian organizations.

Co-ordination and co-operation are essential requirements in all major projects. UN agencies already have co-ordination at the national level vested in the UNDP resident representative. It is at national levels that the IS-DR will be most effectively implemented and the UNDP Administrator in New York should, it seems, perform a similar overall function for UN agencies in relation to Disaster Reduction as a whole. Responsibility for complex emergencies involving war, terrorism and refugees will have to be dealt with as the situation demands and in a different context.

To confuse matters further UNDP has its own Emergency Response Division and the Economic and Social Council (ECOSOC) has its own Panel on the "Potential of New Technologies for Monitoring, and Managing Natural Disasters". At an ECOSOC conference in 2000, at which a number of UNDP Resident Representatives were present, two most significant points were made by the Senior Adviser to the UN's World Food Programme :-

"Preventative measures must be part of development planning in disaster-prone areas."

"Planning for disaster must begin with development. Yet, mobilizing funds before the signs of an emergency is nevertheless difficult."

Proposal

It is proposed that Global Association for Disaster Reduction (GADR) in collaboration with its UN and other Supporting Organizations, mount at least one, desirably two, pilot projects along the lines indicated by this programme. It is suggested that, due to greatest need, one of these pilot projects should be mounted in a sub-Sahara African, English speaking country.

The GADR is a world-wide association of professionals, administrators, academics, technologists, police, military and emergency service officers from government, from non-government organizations and the private sector whose responsibilities or interests embrace disaster reduction from natural, technological, transportation and wilful (terrorist) hazards and also the linkages of such disasters with sustainable development and environmental management. GADR's present active membership is about 1000 but it is planned that this should grow to about 4000 in the next two to three years. GADR also has the support of 55 Supporting Organizations. (See website *http:/www.gadr.giees.unco.edu*). The author is Chairman of the GADR Board.

GADR has been asked to take the initial lead in disaster reduction activities within the framework of the international Decade on Education for Sustainable Development (2004-2013).

Iraq – An Opportunity for Sappers to Excel

LIEUTENANT COLONEL T R URCH MBE CEng MICE MIMgt

Lieutenant Colonel Tyrone Urch was commissioned into the Corps in 1984. Since then, a varied and extremely enjoyable few years has seen him serve in Germany, Northern Ireland, Belize, Hong Kong, Bosnia and Iraq. After chartered civil engineer training and attendance on the inaugural Joint staff course at Bracknell, he completed two "sweaty" years at HQ Land as the SO2 G3 O&D (Ops) which was followed by two superb ones in command of 20 Field Squadron. Another stint at HQ Land, this time as the SO1 Ops/Cts, was quickly forgotten as the rewards of commanding 22 Engineer Regiment at BATUS and in Iraq kicked in.

Introduction

I am by no means unique in musing how fast time is passing by, although I remain concerned by the regularity that the thought occurs; it is depressing to think that I am already half way through my command tour. This article is written on reflection after 6½ months away (Apr – Oct 04) in Iraq on Op *Telic 4* and discusses Engineer operations in support of 1 Mech Bde, Multi-National Division South East (MND SE) and the Iraqi people. The article aims to highlight some of the engineering and leadership challenges of the tour in order to draw together some observations which I feel have benefited us enormously. There has been a considerable amount of erudite work committed to paper since the end of warfighting operations in Iraq and this article repeats none of it, nor does it pretend to add huge value to the on-going discussion concerning "post-conflict reconstruction at the operational level"; rather the paper represents the views of commanders and soldiers at Regimental level. This is not an article full of technical jargon, although there is a smattering for those so inclined, rather it is a collection of experiences that many may be able to relate to.

Training

Much has been written about the value of hard, realistic training and the words of General George Patton adorn many a Training Wing classroom: *The sole purpose of an Army in peace is to train for war; everything else is bullshit*. I am convinced that without the benefit of the Brigade's All-Arms training opportunity at the British Army Training Unit Suffield (BATUS) on the Canadian Prairie, the Regiment, and in particular my Regimental Headquarters (RHQ), would not have been ready for the high-tempo, dynamic operations in Iraq during the summer of 2004. There is also no doubt in my mind that the subsequent demanding infantry-focussed skills package saved the lives of several of my soldiers during numerous engagements with the Muqtada Militia in May and August. The old adage of *hard on the training ground, easy on the battlefield*[1] has never been more valid.

Order of Battle (ORBAT)

Very rarely do you deploy anywhere in the world, either on operations or on exercise, with everything you want; Op *Telic 4* was no exception. Having spent three years in Ops/Commitments at HQ Land, I was painfully aware of the significant impact that supplying individual reinforcements was having on the Corps and the Army in general. I knew that asking for augmentation was neither feasible nor relevant. At its peak, the Regimental Group comprised *circa* 850 soldiers who represented a MN and joint force with formed units from New Zealand, Norway and the Royal Air Force. With no UK framework Divisional Engineer Group in place (as on Op *Telics 2 & 3*), all UK Sapper elements were placed under my command. This necessitated me delivering several specialist Theatre capabilities: High Assurance Search, RE Conventional Munitions Disposal, RLC Improvised Explosive Device Disposal and second line Engineer logistics. I offer two personal thoughts: firstly, that MN Engineer operations can be made to work in the most challenging of peace support environments; secondly, that the span of command for any commander should not exceed six subordinate units. The 22 Engr Regt Group lay-down and ORBAT are at Figures 1 and 2 respectively.

The only Sapper element not integral to my Regiment was the RE Works Group which remained, quite rightly, under command of HQ UK National Support Element. Being both a chartered engineer and a commanding officer of a close support regiment, I have been delighted to see how "grown-up" relations have become between the Military Design

[1] Marshall Suvorov; 1796.

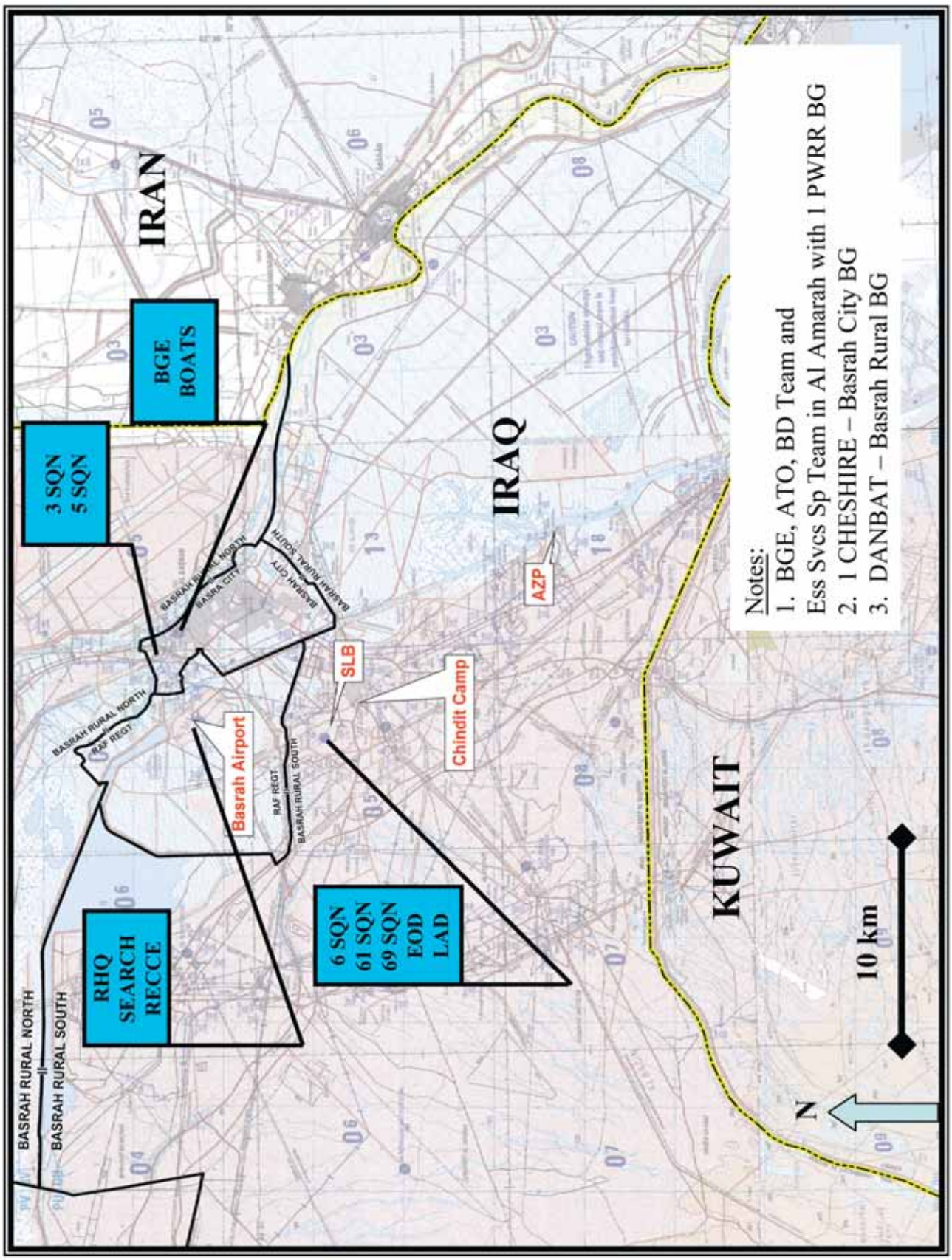
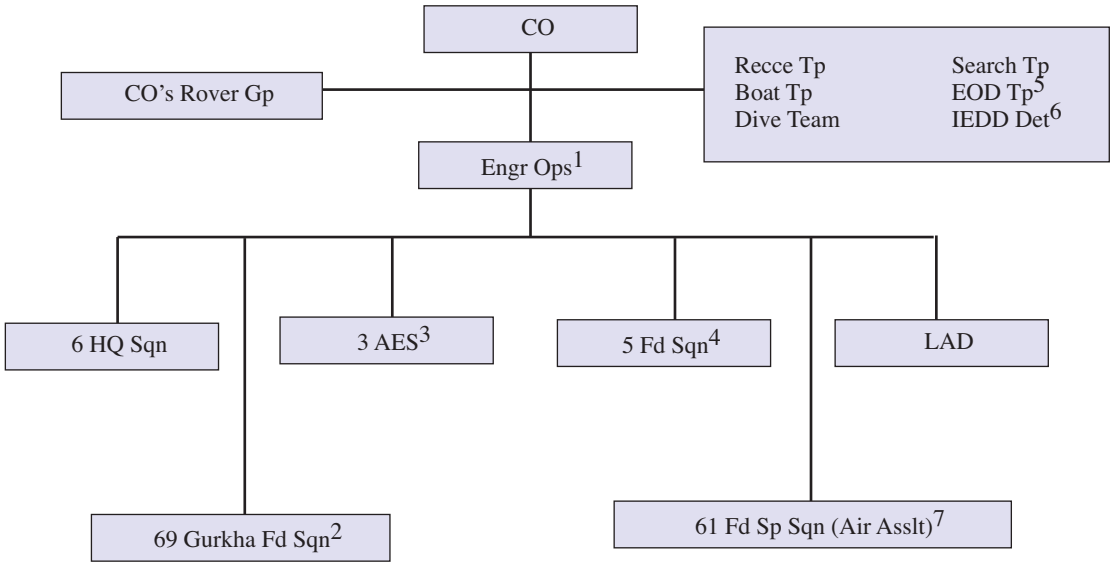


Figure 1 – 22 Engineer Regiment Sub-Unit Locations (27 September 2004)



Notes:

1. Controlled by the Regt 2IC in his capacity as COS.
2. From 36 Engr Regt; replaced the Norwegian Engr Sqn in Jul 04.
3. Including TA Troop from 71 Engr Regt (V).
4. Including NZ Task Force RAKE (55 pax).
5. From 33 Engr Regt (EOD).
6. From 11 EOD Regt RLC.
7. From 23 Engr Regt (Air Asslt).

850 All Ranks
410 Vehicles

Figure 2 – 22 Engineer Regiment ORBAT (September 2004).

Authority (MDA) and Military Construction Force (MCF). Expeditionary operations in Sierra Leone, Iraq and Afghanistan amongst others, have done wonders to dispel [most of] the "us & them" archaic opinions. Achieving this symbiotic relationship is based on stakeholder professionalism, mutual respect and an omnipresent awareness of the commander's intent; something I really learned about whilst working as a Sub Agent on Balfour Beatty's Heathrow Express Rail Link project in 1995[2].

Political Backdrop

THE Brigade's tour of Iraq has been complex, politically sensitive and placed under the international microscope; two key events have dominated:

Transfer of Sovereignty

On 28 Jun 04, the USA and UK ceased to be occupying powers and Iraq became a sovereign nation once again as power was passed to an Iraqi Interim Government. As a consequence of this, the Coalition Provisional Authority (CPA), headed by Mr Paul Bremmer in Baghdad, withdrew leaving a hiatus in the project planning capability which the military was required to bridge prior to the arrival of other agencies (eg Department for Infrastructure Development). These were tense, uncertain times; the Brigade Commander's motoring analogy sums up the mood:[3]

Sovereignty is a speed bump and you are a passenger in a dodgy vehicle which barely has the momentum to get over it. You must line the vehicle up carefully if it is not to stall astride the hump, but you must put an Iraqi at the wheel for this manoeuvre, you may not drive yourself. Imagine he is wearing a blindfold. You may not grab the wheel and you have to communicate through an interpreter, by the way the comms are intermittent ....

The Iraqis are worried that on the other side of the hump is a precipice, so they will not accelerate without encouragement. Terrorists are actually digging a ditch near the bump in which they hope to stop the vehicle long enough to pick-off the occupants and frighten-off any that they cannot kill, but you are not sure exactly where the ditch is located. Or just who the terrorists are ....

Your task is to rally the occupants, guide the driver without touching the wheel, build up momentum sufficient to clear both hump and ditch and repel boarders, before taking the vehicle in for a service and continuing the journey in the back seat ....

Elections

The first successful democratic elections in Iraq post-transfer of authority took place on 9 Jul 04 in Az Zubayr. Further Iraqi-led successes took place in Khor Az Zubayr, Umm Qasr and Safwan in September demonstrating an appetite and capability for reform.

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[2] "Is the grass really greener over there?", The *Royal Engineers Journal*, Volume 111 No 2 (Aug 97).
[3] Brigadier A C P Kennett MBE – Comd 1 Mech Bde LM/01 dated 5 Jun 04.

Mission and Concept of Operations

THROUGHOUT the tour, the Brigade Commander's mission in support of the Corps Commander's Campaign Plan[4] remained largely unchanged although it was updated twice to reflect changing political nuances. My mission, in support of 1 Mech Bde was:

To provide targeted, measured and appropriate Engineer effort to both the continuous development of Essential Services and to military ops, in order to support 1 Mech Bde's security and stabilisation ops aimed at creating the conditions for successful National elections by Jan 05.

Essential Services[5] were not the Brigade's Main Effort (as they were in 2003) but they were by no means robust and it was therefore the job of the Regiment to help the Iraqi authorities to improve, maintain and secure them. Although we contributed a huge amount to the protection of Coalition Forces (CF), this was never to be our primary role; our *raison d'être* was to create capacity in the Iraqi Ministries to enable them to establish and manage their affairs after successful National elections. My intent was to play a full part in facilitating the delivery of more stable and predictable essential services in order to prevent unrest (and thus political instability) in Al Basrah and Maysan Provinces. Critics could argue that the development of Iraq's essential services was not our core business, and I have some sympathy with this view; without Sapper effort however, there would certainly have been public order situations on the streets of Basrah in July and August. The key remains to hand over the responsibility to a technically competent authority at the earliest opportunity.

My Scheme of Manoeuvre saw the Regimental Group deployed with a balanced capability to support three strands of Engineer activity: Essential Services, Security Sector Reform (SSR) and Military Operations[6]. The crux of the whole issue was the provision of a workable framework to allow the Iraqi people to deliver their own solutions; with us working in a mentoring capacity. This involved distancing ourselves (progressively) from rushing in to solve their problems, but being on hand for advice and to offer key capabilities that the Iraqi people either could not provide or could not deliver in a timely manner. We had to work hard to overcome Iraqi perceived prejudices, to bring disparate organisations together and to manage expectations; everything had to be presented as an Iraqi solution and not be seen to contribute to a dependency culture. My Main Effort was always "Essential Services", but I refined this twice during subsequent operational orders to focus our efforts on "Electricity" and then finally to concentrate on "Power Distribution".

Wherever possible, I tried to deliver my intent as a series of effects; for example:

- ***Deter*** attacks on Iraq's strategic infrastructure by enhancing security measures
- ***Pre-empt*** essential services failure in order to mitigate public order situations
- ***Develop*** capacity of Iraqi Ministries to deliver acceptable standards of essential services
- ***Enhance*** the UK military infrastructure where necessary
- ***Minimize*** the Sapper footprint commensurate with operational success
- ***Secure*** our ability to operate by enforcing strict personal force protection measures
- ***Inform*** the Iraqi people and CF of our activities and their positive impact
- ***Sustain*** morale and motivation in Iraq and at home

Support to Essential Services

Background

THE consequences of essential services failures for security and stability were noted during the summer of 2003 on Op *Telic 2*, when frustration at shortages led directly to violent civil disorder; see Figure 3. The military concept for essential services development had been embodied in the mantra "Fragility to Stability[7]": stable services being described as consistent with a reliable supply; adequate quality; sufficient quantity and readily accessible. The fundamental shortcomings in capacity of most of the essential services infrastructure and in management meant that none were particularly developed, efficient or effective, nor would they be likely to be in the short or even medium term; in fact, they almost certainly never had been.

Defining the Context

Axiomatic to progress in essential services is technical

Figure 3 – A public order situation brewing on Operation *Telic* 2 (August 2003)

[4] Campaign Plan comprising four lines of operation: Security, Governance, Essential Services and Economy.
[5] Essential Services: electricity (generation, transmission and distribution), water (potable and domestic), refined fuel (diesel, petrol, LPG and kerosene), sewage, refuse and irrigation.
[6] Discussed later by Major J Q Killip BSc (Hons) MA MIExplE RE and Captain L B Cox BA (Hons) RE.
[7] Fragility to Stability, The *Royal Engineers Journal*, Volume 118, No 2, Page 98, (Aug 04).

Figure 4 – "The [TA] Stabilizers"

understanding. This applies to requirements, capacity, priorities for repair, reconstitution and the resources required to achieve this. Understanding how the system is managed and how it actually should be delivered properly is key; there is strong symbiosis between capable systems and effective management. Put simply, even decrepit systems can be improved by running them properly. Such comprehension enables concerted and coherent effort to be focussed most effectively. An understanding of infrastructure status gained by poorly-informed, superficial and simplistic inspection may reveal some obvious failures or weaknesses but it does not reveal system shortcomings, nor can it quantify inadequate management. This understanding requires subject matter expertise that does not reside in Engineer regiments. This serious shortcoming necessitated a trawl for suitable Territorial Army (TA) officers; four of whom, each with an excess of 20 years' relevant professional experience in related industries were mobilized. Interestingly, none were cap-badged Sappers but all were without doubt Sappers *honoris causae*.

Essential Services Staff

Conceptual leadership was vested in an essential services cell in RHQ, led by the SO2 Plans, also an augmentee; affectionately known as "The Stabilizers" (see Figure 4). The four SO2s Essential Services covered the primary disciplines of Electricity Generation, Electricity Transmission & Distribution, Water and Refined Fuels. In support, OCs were appointed to be the proponent for one or more disciplines and were tasked to provide the dedicated essential services support teams, commanded by a junior officer. Their principal function was to maintain regular liaison with the supported Iraqi organisations at all levels, in order to enable them to assume and reassert progressively more significant control over the plans for, and progress of, development. Their work quantified what was required to maximize the limited capacity of all the essential services systems and derived the metrics against which to measure it. The key to this engagement, in particular the personal commitment of the Directors General (DG), was the acceptance and professional credibility of the SO2s with their Iraqi counterparts.

Getting Started

In the early part of the tour, the essential services staff responded to reports of all sorts of failures, attributable to a variety of causes, reflecting generally the endemic problems that bedevilled the reconstruction effort throughout Iraq: the unpredictable failure of dilapidated infrastructure; incompetent and probably wilful mismanagement; attacks on infrastructure for criminal and terrorist purposes; illegal tapping and smuggling. Reporting was often inaccurate and occasionally hyperbolic; initially, Iraqi reticence exacerbated this. Invariably, the crises were short-lived and most would have been resolved locally given time; eventually, more developed understanding and physical improvements minimised such problems. Of all the Lines of Operation (LoO), essential services had the most effective emergent Iraqi lead, although *bukra fil sabaah,* the Arabic for *tomorrow, in the morning* appears to have the same meaning as *mañana* but lacks the same sense of urgency! The principal frustration early on was the erroneous view in the Brigade HQ that the essential services staff were directly responsible for resolving these crises. Determining accuracy of reports of problems and identifying action to resolve them consumed much valuable time and effort and shifted focus from forward planning.

Essential Services Campaign Plan

Having derived an understanding of the critical issues, the nascent Essential Services Campaign Plan was re-developed significantly. This Plan comprised three distinct elements, directly linked and each highlighting progressively finer-grained detail. Informing this synopsis was a series of Key Stabilisation Indicators for each essential services discipline which set out the technically specific criteria for assessing performance and development. To give a more universal, qualitative assessment, Measures of Success were then developed to show progress from a legacy position, through our tour and the Transition of Authority and then onto predictions for the National elections; see Figure 5. This summary assessed the status of each discipline through measures of critical – marginal – stable – robust; refreshingly, coining a new mantra, "Criticality to Robustness" was never mooted! Finally, The Campaign Plan (see Figure 6) highlighted a "route map" for each of the essential services disciplines, charting progress towards the Commander's Endstate[8].

[8] A secure and stable Iraq with Iraqi Security Forces capable of maintaining economic regeneration and political reform.

	STATUS AS AT JAN 04	STATUS AS AT MAY 04	STATUS AS AT JUL 04	STATUS AS AT OCT 04	STATUS AS AT JAN 05
	Legacy	Start of Op *Telic 4*	Transition	End of Op *Telic 4*	Elections
Power Gen	R	R	A	A	Y
Power Trans	R	R	R	A	Y
Power Distr	R	R	R	A	A
Fuel	R	R	A	A	Y
LPG	R	R	R	Y	Y
Water	R	R	A	A	Y
Sewage	R	R	A	Y	Y
Refuse	R	R	A	Y	G
Irrigation	R	R	R	A	Y

Notes:
1. RED (CRITICAL): Major problems and complete CF engagement required to avoid failure during periods of peak demand.
2. AMBER (MARGINAL): Substantial CF effort required to achieve desired effect; potential to disrupt SSR and/or political processes.
3. YELLOW (STABLE): CF monitoring still required but no impact on SSR or political processes.
4. GREEN (ROBUST): Well on the way to completion; control vested in a competent Iraqi organization; no direct CF engagement required.

Figure 5 – Essential Services Measures of Success.

Money – The Bridge from Theory to Practice

Effect requires capability and intent. In the essential services context, funding represents a significant component of both. Whilst suitable for small scale Civil Military Co-operation (CIMIC) consent-winning projects, the UK's funding programme's limited resources and restrictive approvals mechanism were generally inappropriate for the more fundamental essential services projects. Such minor projects may have a local effect but this can, in practice, be counter-productive if planned and executed in isolation; the impact may be quick but the effect may be nugatory. Other, more substantial and more readily accessible funding sources were available, although in most cases the impact of the Transfer of Authority was to cause a detrimental hiatus in the allocation and release of funds until the moment critique had often passed.

The Desired Effect

The most practicable effect of essential services projects was to prevent degradation and failure, rather than create new capacity; to buy consent and time before eventual significant investment could offer this[9]. However, their impact was definite, quantifiable and tangible and it met the clearly articulated aspirations of the population. Across all the essential services disciplines, there were positive developments; some of them quite extraordinary. Whilst most required funding to a greater or lesser degree, all were facilitated by improved management. The Iraqi Engineers were widely respected for their ability to continue to coax as much output from ageing plant as possible; years of operating under sanctions had made them particularly resourceful but managerial skills were often less well developed. In practice, the worst crises were actually handled particularly well and, in some cases, recovery was managed with the effectiveness and efficiency that might be expected from a more developed country. As relationships developed, characterized by mutual professional respect, the flow-rate of information increased exponentially. The Iraqis retained the enigmatic ability to surprise at every opportunity.

Carpe Diem

In addition to mentoring managerial processes and introducing best practice across all the disciplines, numerous original ideas conceived by the essential services staff and support teams were translated into practical projects that had real campaign effect; a few examples of their disproportionate impact follow. The sourcing of electrical spare parts, the implementation of sub-station modifications and a new buried distribution cable laid in Basrah optimised load shedding across the City, enhancing stability and therefore increasing the effectiveness of the electrical distribution system. The provision of cable fault-finding vans, tools and equipment followed the production of the first comprehensive distribution system schematics which all contributed to optimised performance and reduced system fault response times; see Figure 7. Anti-fuel smuggling initiatives contributed to the significant reduction of the 40 per cent losses of refined fuels to criminal activity. New oil and fuel pipeline repair techniques were introduced to improve response time and reduce losses. Fuel stations were surveyed, checked, repaired and renovated and offered management advice to increase

[9] The USA has committed $18.6 billion of Congressional funding to the reconstruction effort; US analysis suggests, however, that some $50 billion will be required to bring Iraq back up to its 1990s standards.

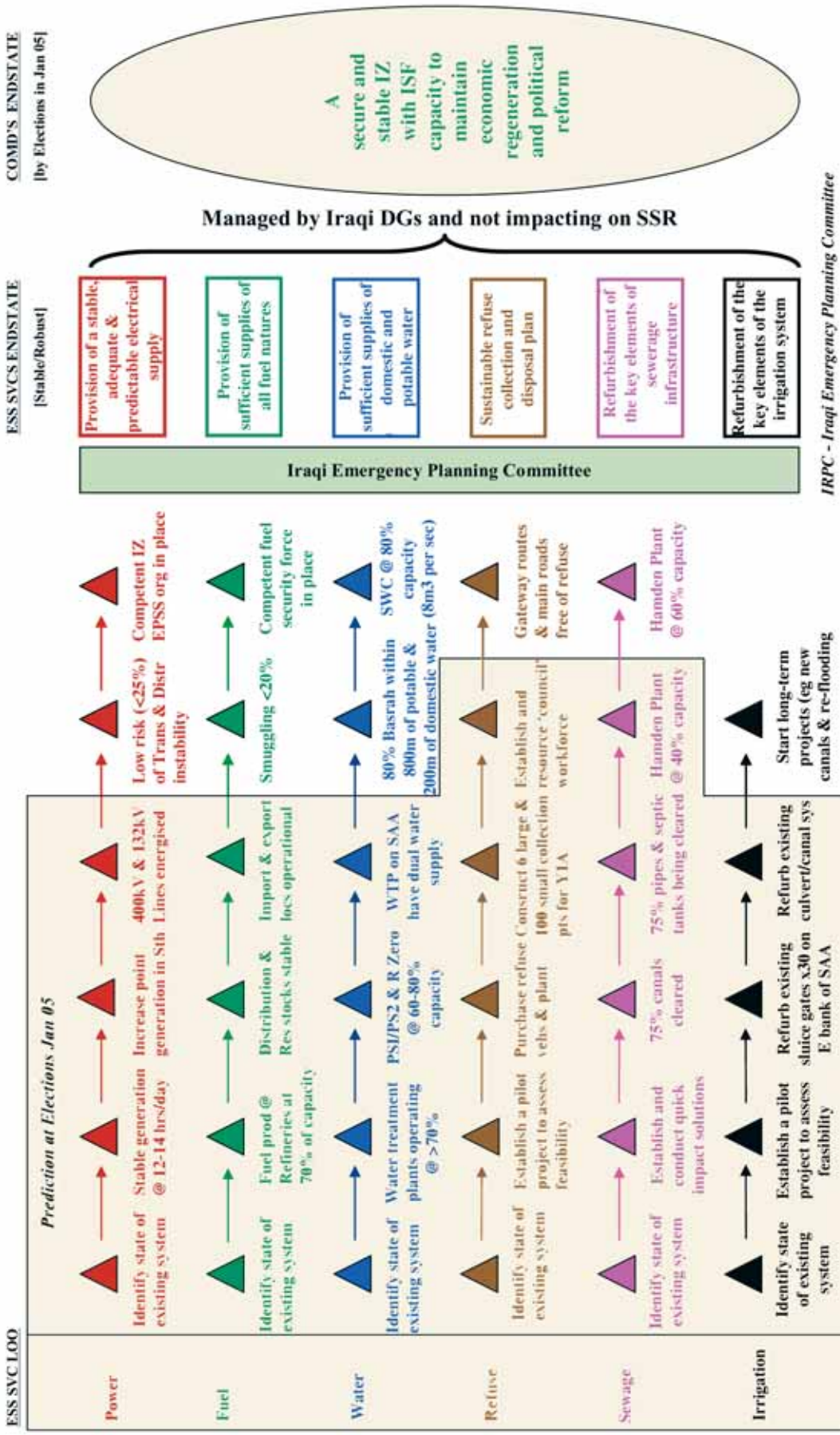

Figure 6 – Essential Services Brigade Campaign Plan.

Figure 7 – Electricity – The Heartbeat of Iraq

efficiency; see Figure 8. The water supply and sewage systems were mapped and assessed. Valves and metering were provided to enhance control and alternative sources and storage and distribution equipment were commissioned to mitigate failures in the principal source of Basrah's water; see Figure 9. Refuse collection points were constructed throughout the City and plant was provided to operate these. Initiatives were taken to clear and unblock open sewers and reinstate the network which had effectively ceased to function. Irrigation projects reinstated and replaced infrastructure that was inoperable to bring land back into production for dates and other crops.

The Acid Test

The essential services LoO, whilst not the Brigade's Main Effort actually underpinned the capacity and potential for success of all the others: indeed, in September, the Brigade Commander publicly questioned, rhetorically, whether the Main Effort should not actually have reverted back to essential services as it was for Op *Telic 3*. The legacy of information, consent and engagement engendered by all those involved also set the conditions for future major projects to proceed. The real acid test of the effectiveness of the Essential Services Campaign was that despite the assured-sounding prophesies, there was no civil disorder attributed to shortages in electricity, water or fuel in the summer of 2004.

Support to Security Sector Reform (SSR)

Background

SSR is the process by which the capacity of Iraq's security architecture[10] is developed, so that Iraqis can provide a robust level of national security independent of MNF; this was key to facilitate secure and stable operations and remained one of Comd 1 Mech Bde's key tenets for success. Our role in the front-end of this SSR piece, whilst not manpower intensive, added significantly to key parts of the successful development of the reform process. Two examples follow:

Support to Iraqi Security Forces (ISF)

On 21 Apr 04[11], the Az Zubayr Police Academy and several police stations in Basrah City were attacked in separate vehicle-borne improvised explosive devices (VBIED) initiated by suicide-bombers. At the Police Academy, 2 x VBIEDs were driven at the front gate; the first to try to break into the camp and the second, 90 minutes later, to target any response to the attack and kill Iraqi Police Service (IPS) personnel deploying out of the base. The *Hesco-Bastion* walls absorbed the blast from the first VBIED, protecting the guard in the sangar immediately above the seat of the explosion but did destroy part of the perimeter wall and the main gate in the process. The second VBIED killed several policemen and also destroyed a section of wall. The CO task organized those forces that were operational (the Norwegian Engineer Squadron with plant and echelon support from 6 HQ Sqn) and dispatched them to carry out emergency repairs; see Figure 10. As the threat from further attacks was high, especially from direct-fire, the 1 RWF BG provided a cordon. The MCF was on site within hours of the blast and had re-established the integrity of the Academy within 24 hours of the attack. The Regiment's swift response demonstrated the Brigade's resolve in supporting the Iraqi authorities. Similarly, the Regiment rebuilt the demolished Al Soudia Police Station – albeit in a temporary prefabricated manner – in the centre of Basrah. The result: a working police station within 96 hours of being destroyed with a sign hanging outside saying *"Al Soudia Police Station open for business again"*.

The need to reinstate the integrity of the camp had an importance that went well beyond the protection of Iraqi policemen; these attacks had exposed the Academy as a soft target at a time when it was about to receive a new intake of police cadets as part of the SSR capacity building programme in southern Iraq. Over the next few days,

Figure 8 – Hands-on practical RE and REME expertise.

[10] For example: National Guard, Police Service, Judicial System, Customs Police, Riverine Patrol Service.
[11] The same day the CO assumed command of the Op *Telic* UK CS Engr Regt Gp!

Figure 9 – An example of the TA delivering high quality technical advice.

Figure 11 – The Iraqi National Guard EOD Company.

the Regiment deployed another construction force led by 3 Armd Engr Sqn to upgrade the academy with additional *Hesco-Bastion*, anti-vehicle ditching and security enhancements to existing sangars and the perimeter wall. The tasks, which were completed within five days of the attack, involved all aspects of engineering but majored on recce, design, resources, combat engineering, artisan, plant and MT; reinforcing the concept of Design, Resource and Construct.

Mentoring Commitments

The Iraqi National Guard requested assistance to develop an EOD capability to deal with the huge quantity of ordnance that had been dumped in hundreds of locations across Iraq. 22 Engr Regt inherited a fledgling Iraqi EOD Company of 50 personnel who were undergoing preliminary training. The Joint Force EOD Group attached 4 x RE bomb-disposal personnel to the Company to mentor and develop their skills until by August it had achieved a credible, safe standard. The Company has since been validated by CO 33 Engr Regt (EOD) and is now operating largely independently (see Figure 11) although it is still being monitored; thousands of mortars rounds, artillery shells and other munitions have been disposed of.

The Iraq/Iran border is long, lightly guarded and follows both land and littoral (Shatt Al Arab) features. The Customs Police are present at border crossing points, but lack training. From July, Search Troop deployed to train them in low-level techniques; searching people, vehicles, vessels (see Figure 12) and even donkey-carts! The establishment of a solid rapport with the Police has helped gain their confidence when working with other MNF personnel.

Support to Military Operations

General

In providing close support to battle groups and general support to both Brigade and Division, 22 Engr Regt was involved in a vast range of tasks, including constructing *Hesco-Bastion* fortifications, fabricating all manner of structures (eg gates, stairs, offices, ranges), boat manoeuvres in support of brigade counter-insurgency operations, bridge repairs and all conceivable manner of search tasks including forced entry into locked safes and supporting hard-knock arrests of suspected terrorist bomb-makers.

Figure 10 – SSR – Reconstruction of the Iraqi Police Academy.

Figure 12 – Search Troop training Iraqi Customs Police.

Provision of Blast & Fragmentation Protection to Camp Abu Naji

April brought a marked increase in hostility towards the MNF and this was particularly apparent in Maysan Province, where the two bases occupied by 1 PWRR were regularly attacked by mortar, rocket and small-arms fire. Camp Abu Naji, the main BG location, was only protected by a 2m high earth bund which offered little protection from blast or fragmentation; the Brigade Commander ordered that urgent protection be provided for all personnel (*circa* 1100) in the camp.

The enemy *modus operandi* was to attack the camp in projectile bursts of 1 to 5 rounds and thus by the time the soldiers could get into the existing ISO bunkers, the danger had passed. To avoid this *Catch-22* situation, 1 PWRR took to sleeping in the bunkers all night, but this proved impractical due to the high temperatures (35ºC at midnight) and mosquitoes who found the plentiful food source a delight! As the attacks on the camp were continuing unabated, speed was of the essence and 3 Armd Engr Sqn was tasked to lead a Regimental effort to construct the force protection measures. The task demanded Sapper effort from across the Regiment (200+ soldiers) including the Construction Supervision Cell, lift from 6 HQ Sqn, plant from 61 Fd Sp Sqn and Infantry Assault Pioneer support. After deploying the MCF by both Hercules C-130 and armoured convoys, the Regiment worked continuously (30,000 man-hours, 2000 plant hours) in 12 hour shifts to construct 10km of Hesco-Bastion walls (see Figure 13) and 16 x ISO bunkers complete with air-conditioning, lighting and mosquito barriers. Works were finished two days ahead of schedule and the defences have since proved successful against numerous attacks (including direct hits). The bomb damage assessment results were forwarded to HQ E-in-C(A) SO2 Force Protection as he was intricately involved in the designs.

1 CHESHIRE BG Raid

On 17 Sep 04, a logistic convoy was engaged by machine-gun fire from the roof of the OMS building[12]. 1 CHESHIRE quickly dominated the area and conducted an operation to enter the building and arrest the attackers. The operation was supported by Boat Troop (see Figure 14) who worked alongside the Royal Navy to insert a company from an unexpected direction. Search Troop deployed directly behind the assault troops entering the building and the EOD elements were on standby. When the 1 CHESHIRE BG moved into the building it proved empty of any MM personnel, but contained a huge cache of munitions, including small arms ammunition, rockets, mortars, heavy machine guns and complete IEDs identical to those used against the MNF in Basrah over the past months. Search Troop completed a thorough check of the building and EOD deployed to clear an IED. The Regiment even deployed combat engineers to patch up the damage to the building before the troops extracted thus maintaining the consent of the local population.

Summary

In supporting SSR and military operations, Sappers have had to draw on every capability available to the Regimental Group. The tasks were extremely varied and the challenges involved joint operations, combined arms coordination and the maintenance of political consent.

Observations and Lessons Learned

This article cannot possibly highlight all the lessons learned (see the 22 Engineer Regiment Post Operational Tour Report for a more detailed discussion), but some of the key observations are as follows:

Conceptual

- **Understanding Effects**. Getting subordinates to understand the Intent you are trying to achieve is not doctrinal-mouthwash; it is crucial to operational success. A greater emphasis needs to be placed on effects based terminology during the orders process.

- **Warfighting Doctrine.** With a little adaptation, warfighting doctrine and procedures will work in any operational environment. The Brigade's Targets Process which resulted in a Joint Effects Matrix (Detect, Deliver, Assess) clearly articulated the Commander's priorities for resource allocation in each of the lines of operation (Security, Governance, Essential Services, Economy).

- **Multi-Skilling.** If ever there was a tour when the benefits of

Figure 13 – Engineer close support to battle groups.

[12] A total of 1402 attacks were directed against UK call-signs across the Brigade area between Apr – Aug 04; an average of nearly ten contacts per day.

Sappers being Infantry soldiers, combat engineers and artisan tradesmen were apparent, Op *Telic 4* was it. My US counterparts never ceased to be amazed (and jealous) of our capabilities.

- **Engineer Logistics Support.** The performance of my field support squadron was quite outstanding but its current ORBAT seems dated and slightly unwieldy if it is to continue to meet all the Army's multi-theatre demands. A review of the way in which the Corps delivers materiel support is timely and has been started at the request of HQRE Theatre Troops.

Moral

- **Getting People to Fight.** The ability to get people to fight involves motivation, leadership and sound management. I am clear (as never before) that the basic building blocks for this success are the subaltern and JNCO section commander; both have delivered in spades during this tour.

Physical

- **Force Generation.** If task organised with care, MN Engineer regiments can be very effective even in the most volatile peace support environments; any span of command should not exceed six subordinate units.

Figure 14 – Boat Troop in support of Royal Navy and Infantry operations.

- **Pre-Deployment Training.** The benefits of conducting focussed, high quality individual and collective training prior to deployment are clear. Every opportunity must be grasped to work-up the RHQ and operate alongside the Brigade staff. Individual pre-deployment training must be hard and well-structured; effort needs to concentrate on fitness, weapon handling, understanding the operational environment, reaction to enemy fire whilst in vehicles and defensive driving skills. Pre-deployment artisan refresher training, whilst desirable, is by no means essential in the current climate; Sappers never fail to perform.

- **Professional Engineer Training (PET)**. Qualifying as a chartered engineer and being selected for regimental or squadron command are not mutually exclusive. In fact, being seconded to the civilian construction industry during PET is outstanding preparation for demanding tours in austere environments such as Iraq or Afghanistan.

- **Specialist Site Safety Training.** All troop commanders and field troop SNCOs should attend the Site Safety Supervisor's course in addition to conducting high-quality focussed project management training prior to deployment.

- **Reconnaissance.** Reconnaissance training at both regimental and squadron level needs to be more focussed on infrastructure and essential services to provide commanders with accurate and timely data. Force protection recces must be comprehensive and comprise Engineer, G2 and Client representation.

- **Technical Awareness.** Despite my "professional" qualifications I have [until this tour] remained sceptical about increasing the technical content of troop commanders' training; no longer. A more comprehensive understanding of civil, electrical and mechanical principles is required (including the application of technical estimates) if junior officers are to play their part in complex operational environments such as Iraq.

- **Utility of TA.** Appreciating that all operational situations are different, I am clear that had I not been able to call upon the specialist skills of the TA (eg the 4 x SO2s running Power, Water and Refined Fuel) the effectiveness of the Regimental Group's contribution would have been hugely denuded. Of note, my TA specialists were RLC and RAC which demonstrates that the adage of 'best man for the job' is wholly appropriate and supportive of current Intelligent Selection techniques.

- **Use of Experts.** No deployed force will ever have every capability that it requires; maximum use should be made both of "reach-back" and "rear-basing on a reduced notice to move". The latter should maximise all manner of subject matter experts such as SO2 Force Protection in HQ E-in-C(A).

An Afternoon with Tito's Tailor

– and other vignettes from Serbia and Montenegro for those travelling in short hops on the underground, and who would rather be elsewhere

MAJOR GENERAL J D MOORE-BICK CBE MA FICE FIL

Second Lieutenant Moore-Bick's first decisive act in the Army was to counter the congratulations from his Gunner adjutant on his imminent, much envied posting to 1st RHA, with the remark that he was considering the Sappers. Summarily ejected, he bought, taxed and insured a car (one careful lady user, of course!) that morning and drove to Chatham in the afternoon to join 47 YO course, to the consternation of QMSIs Wood, Skidmore and Donald, completing the course in Gunner livery while the Army (but not the Army Pay Office!) tried to find out where he had disappeared to. After early years under a green beret, Germany claimed him and he was firmly moulded at the feet of Clausewitz by the Führungsakademie *in Hamburg. Germany, and British Forces Germany, remained constant and loyal friends, in Cold War and hot, culminating in his appointment as both GOC United Kingdom Support Command Germany and, for the first time, also Director General British Forces Liaison Organisation, Germany. He is now Special Defence Adviser in Belgrade, his last, and possibly least explicable move being to master Serbian; that has something to do with the spare time gained by not loving any shape of ball, until rediscovering croquet.*

The Lands that Time Forgot

Anybody still remember the 90s? Well, most of you in uniform have moved on to grittier and now sunnier places, but the Balkans are still there at the "bottom" of Europe, with scars that time, money and patience are healing and many that those three virtues will never heal. Germany on the other hand is rich, peaceful, content but groaning in its luxury, its order and its preoccupation with recycling. So on that day of surprise in my office in Rheindahlen, like many surprises as a Royal Engineer, when I was asked to swap the near perfect order of BFG for the near chaos of "S & M", what on earth possessed me to return? Two incarnations in the area had given me a rough enough ride already. One of the bigger German newspapers, bigger than others in both weekly weight and intellect, described the Bs as the graveyard of reputations. Who on earth, apart from soldiers commanded to such places, who do their work uncomplainingly, nobly and well, would ever want to go back?

My inheritance from those parts? Well up to now, a medal or two and enough little tin numbers to do my times tables, and a host of friends, generally poor, displaced, wounded in soul or body, or wracked with doubt about the future – a material millstone round my neck they may be, but they are a spiritual enrichment of unintended proportions (You never knew how lucky you were until… etc). So I do it partly for them as well.

When the call came, it came at a rush, with five minutes *maximum* to reply, to fuel a conversation between ministers across Whitehall. An adventure at 54? Only five seconds needed!

I went to London to find out what was intended for me in Belgrade. "Go and change the culture" they said in the MOD. I gulped. Steeped in *Auftragstaktik*, this seemed the broadest terms of reference since I landed in a broken neighbouring country in 1995 and a voice somewhere commanded "Fix it!" Still wondering, I walked over to the FCO and repeated my question, "What do you want me to do?" The jolly lady answered "Don't be too ambitious, just go and be helpful"!

So that's the brief. So far, the first bit, changing the culture, is, probably, quite unknown to the author, right on line, *to posto, 100 per cent*. The second bit has been tricky in a society, once, and still in parts, sophisticated, whose past leaders have chosen a path diverging away from the rest of us in Europe, who have been bombed to bits – imagine 77 days of NATO bombing in your particular region of Britain – and who, not surprisingly, harbour suspicions, resentments against foreigners especially NATO ones, a little hatred and much self pity.

The task is a lone ranger one, but as far as coordination is concerned if it doesn't makes things easier than having a staff of several 00s, it makes it crystal clear who is to blame. And the "be helpful" bit? More than once the hand that feeds, or tries to help, has been snapped at, if not bitten, but all that fades quickly here, so read on if you want to judge for yourself.

An Afternoon with Tito's Tailor

It was a happy piglet. I knew that as soon as I started to eat it. And before that, I saw the rest of the family, as happy as pigs can be, and in Serbia that is probably happier than elsewhere in the world. They were contentedly munching delectable spring flowers mixed with luscious fresh grass from apricot orchards in full blossom. Nothing has reached them from Brussels, they smile, they are respected, scratched behind both ears and they know nothing of the cholesterol they threaten me with. Their owner, Djuka, was Tito's personal tailor and he is temporarily mine. He may go under a number of names in your jacket, Pierre Cardin being just one of many at his disposal and he is no less a man, indeed he is more for that. He incorporates Yugoslavia, in past prime and present poverty. Djuka's chickens as well as his pigs like me,

Tito's Tailor.

and I like them. What we enjoy together, in warm sunshine, is a rural village long lost in more advanced countries like ours. What we achieve together is a meeting of different worlds, almost planets. Djuka will vote in a way that the international community will thoroughly deprecate and will never understand, but Djuka will vote for something that is long lost in the past when he tailored Tito, and that is the sadness of it.

And what of the ostensible business between us, my new suit? For him it is a matter of existence, survival. For me, almost loose change in the pocket. A suit, now ready for a first fitting, in the finest Italian cloth in Belgrade (I know, we toured every shop until he and I were satisfied).

But after an excellent lunch of Serbian cheese pie, a couple of kilos of it with his powerful rakija from those same orchards as the pigs' flowery grass, washed down with his fruity white wine, a tour of his extensive, scattered smallholding, about eight hectares, the most mixed farming I have ever seen, followed by his happy piglet for supper with his not so tempting red, the suit is, unsurprisingly, rather too large round the waist and we have to resign ourselves to another try, another day, without the piglet's sibling.

Not wanted on Voyage to Europe

I had just got comfortably seated in the big Conference Hall at my important looking desk in the front row. "They want you to leave", he said, most courteously and quietly, in English. **"SSta"?** I said as a rocket ignited beneath my bum. "They want you to leave".

As the rocket got to full thrust stage, I packed, dignified, slowly, thinking. This, I said to myself, is back to Balkans 1992,3,4. This is the arrogant drunken guard but fortunately without his AK 47. This is the meeting of two cultures, Milosevic Serb, old and new Europe.

What to do? As I got to the end of the row of the front seats, in full view of the several hundred officers present, I realized I had to pass the main podium where the smart, neat, tidy soldier – a corporal just like one of ours – had just been testing the microphone. "This needs courage" I said to myself and diverted the quick few steps to get to the rostrum. Now I know how to say in Serbian "ladies and gentlemen" but "gentlemen" on their own, even when they are not being gentlemen, momentarily stumped me. But my address, short, well, "pithy" might be better, and mercifully correct in its grammar was spat out as "Generals and Admirals", I thought that my several friends amongst the Colonels would be flattered by that should I be able to do some re-appearance in this milieu.

"I would like you to know that they (who indeed?) are turfing me out and I will be returning to England for some time". Short you will agree, but with enough question marks in the air to alarm some, probably the majority of reform-thirsty average Serbian and Montenegrin officers. "Good riddance" I heard somewhere, but in Church Slavonic. And then I marched out, not too quickly, not in shame, but certainly not in contempt of all of those who had greeted me so warmly earlier that morning at the annual analysis of operational effectiveness of the Armed Forces of Serbia and Montenegro at Topchider.

So off I went, past the guard of honour in the wrong direction, who were awaiting the President, back to the British Embassy to report an "incident" and on to England to tell mummy in the MOD.

So, what happened next? Well bridge building is what we sappers do. Very shortly after arriving in Tunbridge Wells on a school governor's inspection, an unlikely place for an international reconciliation, the ubiquitous talk machine in the pocket burbled its irritating tune to reveal the Chief of the General Staff from Belgrade with an invitation to lunch at earliest convenience. So, I returned for lunch a week later, and the bridge built at that lunch is much stronger than the one it replaced, as we try, together, to lever ourselves out of one of the most unenviable political, economic and military blind alleys in Europe.

Back to sappering – on the Sava.

The Rolls and I.

The Roller

I couldn't believe it! A factory new 1968 Rolls Royce Silver Cloud or Phaeton before VW pinched the name, custom made for Josip and Jovanka Broz Tito. Polished to infinity, cared for with love and the identical twin of one given by HM Queen Elizabeth II, Queen of all Dominions and Empires before the days of the EU, which was pinched by the Slovenians after the break up. Immaculate make-up cabinets for her, a beer fridge – for him, no doubt.

This was my first visit to the Guards Brigade, who amongst the ten thousand things which such a brigade charged with the domestic tasks of the Ministry of Defence and suchlike in the capital city is responsible for – guarding, transport, bottle washing and here, formerly, tending the presidential greenhouses, and also for me. I had gone armed with the usual chocolate (my taste) and whisky (their taste), to say thank you. The welcome was most friendly, my request for *"nom Brimborium"* (German word which hardly needs looking up) was fully respected and I climbed the stairs for the commander's office unnoticed. In our hour of conversation alone while the ADC from the brigade was put to work in the outer offices to explain what his unexpected appointment to me offered (he came to me as a by product of the Topchider incident) we covered the miles from London to Nish, (not Belgrade, that's the easy bit, it's outside B that the challenge really exists), the past, the future, Srebrenica, Mladic, who he served with and knew well, not approvingly discussed by any means. Colonel Choshic's son is in the ceremonial guard and he is as proud as any parent of a Household Division soldier on Horseguards. His office has bayonets, shields, swords, pictures as you would imagine any infantryman's office anywhere. Course photos which could be Warminster or Brecon.

Long before the rakija takes hold, having fought with the Turkish coffee, our minds and personalities meet. His smart service dress and my Cbt 95 have much in common. On essentials we agree, on peripherals we have differences leading to interesting discussion. Most vitally, and sometimes rarely, we agree on the picture of the past. To him Mladic is a highly intelligent war criminal, but a war criminal at that. This is progress in this part of the world, a little progress, may be, but significant.

And the Rolls? Along with two almost equally Mercedes top of rangers from the late '60s and a load of very well worn trucks, presided over by a smart, confident, English speaking subaltern who could just as easily be serving in the British Army, perhaps in the sappers, with good prospect of success.

We bombed his barracks to bits, and now the Americans plan to build a huge embassy on the ruins. Am I the only one to think this an obscene gesture of victory? And he, the subaltern, his sergeant and the Brigade Commander, shake my hand and salute me as if I were of their own. But crimes were committed in their name and this visit tells me that though the road back to Europe will be long it will have this commander leading the way in coming to terms with the past.

And the cars? Off to the museum, safely where they belong rather than the auction house preferred by the foreign bean counters who also advise here.

All at Sea

I knew I was in good hands as soon as we got out of the snow of Mount Zlatibor and over the makeshift harbinger of independence at an illegal (?) internal border and into to the rock fall-strewn roads of Montenegro, the phone rang. It was my most courteous host, Admiral Jovan Grbvac, to see if we were all right on our 12 hour drive down from Belgrade to Tivat. He rang every two hours thereafter to ensure my safety. Knowing that both of our cultures prize more military values than luxury, he had booked me out of a 4* hotel which was thought appropriate in Belgrade and into the home for stranded submariners on shore (of which, with one semi-working submarine there are quite a lot)

So began a visit to the Naval Corps of Serbia and Montenegro. Now imagine being in a navy of a state in which the coast may suddenly get up and float away. This is what faces the Admiral as he battles with the future. The structures above him are confusing; imagine being dependent for your pay and housing on one of John Prescott's super regions which has little money in its treasury and no interest in your well being. He and his sailors face it with dignity, pride and bewilderment. They man a tall ship for training which the Royal Engineers Yacht Club would die for. The young subaltern who is helmsman of this ship, though born in the land-locked Vojvodina between the BIG rivers of South East Europe is a yachtie through and through. The captain is a beekeeper (lovely, how picturesque you say but for him it is an existential activity not a hobby).

We spend three days together, the Admiral and I. We watch special forces submarines and divers, huge mobile coastal anti ship missile systems, we tour the coast in the Admiral's

Tall ship "*Jadran*" with helmsman and beekeeper.

barge, a sleek powerful modern cutter and we lunch on board a *Kotor* class frigate, one of two without name since their former names are of places in a now separate state. The Captain, Commander Andric, is modest clever, charming and I judge well educated, he is much admired by his crew, but he is nervous. His tiny wardroom is to be host to a foreign general, his admiral, his admiral's deputy, and his flotilla commander, plus our beekeeper. Handshakes, smiles, gifts and the ever present digital camera, 4 megapix, so no messing when it comes to "spying", nor making friends, we break the ice quickly, the sun does the rest for us, and the Admiral plays his part brilliantly turning up on the quayside clanking more bottles of excellent wine.

And then we're off! In the cramped wardroom of PF 32, all barriers break down over three hours pf lunch with many now familiar themes, PfP, Mladic, nationality, poverty, uncertainty, Europe – the latter well understood by these men of the sea who are part of Europe in the Adriatic, every day, in a way their landlocked colleagues are not. A small chill of nervousness arise, why? Pudding has arrived, "Sutlash", and they are not sure whether the British guest will approve, after eyeing it approvingly, but feeling very uncertain, I find it is rice pudding, but made in ship's style with milk powder. Whatever, however, it tastes fine, so regardless of appetite seconds are called for and the moment is won; the Deputy produces two more bottles of wine. I somehow get the feel that the captain, a real Royal Navy look-alike if ever I saw one, will have acquitted himself well despite his nervousness about what the Sailor who is steward for the day, and only that day, will do next.

The sequel is supper with the lunchtime crowd, joined by their wives, as my guests, in a new and very efficient and friendly restaurant on the edge of Tivat. I am host and the guest, ladies and gentlemen are immaculately turned out for me, for them. Delectable sea bass and John Dory, elegant surroundings and sparkling conversation, it could have been Rick Stein's Middle England in Padstow. A memorable evening for us all.

But I have to go again, not just because they are my, our, friends in Europe, but because I promised to go a read a Serbian children's story at a Kindergarten in Kotor run by the Captain's wife. So, if that what it takes to do the job, then that's what it takes. It all seems worthwhile at moments like this.

Postscript

If my intention to entertain you on the underground between stations has suceeded, you might have got from Victoria to King's Cross, or from the Ministry of Defence to Cannon Street. As a later postscript, some of the above may be prophecy since the coast, in other words Montenegro, is determined to float away into independence, and more elections are taking place, with even more in the Spring, as this part of the world desperately seeks stability. The Balkans are, it seems, always with us.

All Change – So What's New!

From your man inside the Defence Logistics Transformation Programme

LIEUTENANT COLONEL R K TOMLINSON MBE MSc

Rob Tomlinson joined the Corps in 1986. After a series of carefree and thoroughly enjoyable posts – ADR, Training, Harrier Support, G1 and G2 Staff, Ops, and TA – he was shoehorned into his logistic niche. Command of 65 Field Park Squadron was followed by the Logistics Management MSc at Shrivenham, SO2 Engineer Logistics at HQ LAND, COS Engineer Systems Support IPT and finally a short notice move to the E2E Logistics Team; recently subsumed into the Defence Logistics Transformation Team.

The first half of this article has been adapted, with the author's blessing, from a recent submission to The CRAFTSMAN[1] *. The bits about the Corps are pure Tomlinson.*

WELL who'd have thought it? "Jacko" announces the end of the Infantry Arms Plot and the demise of a number of historic battalions. CDS speaks of "transformation" and there is a substantial rumour that we are to get rid of some of our tanks in order to re-role some of the heavy mob into something more light-weight, agile and strategically responsive – that'll be horses on the come-back then. And all of this as a result of something called "Future Army Structures", or "*FAZ*" if you're clued-up. Add to *FAZ*, if you're hard enough, the trauma of "Bowmanization", the imminent onslaught of "(w)Hole Fleet Management", REME Re-balancing, the E2E study, PAYD (Pay As You Dine), Engineering Competence & Standards blah blah blah humbug. Oh, and before I am unceremoniously shafted with the blunt end of an Iraqi, Afghan, Balkan or Fire Fighting souvenir, there are more than enough commitments to keep us in compo for an eternity on top of all this change nonsense. So, to use an expression I over-used as a troopy, albeit quietly, "what *exactly* is going on?"

Well, before any explanation of "what for", let's put this chaos into context. The Army has always changed the way it does the business – not to adapt, change and overcome is to invite your next enemy to overcome you. Compare the Army of 1918 with that of 1945: vastly different structures, smarter tactics, better comms (now there's an idea) and some pretty fancy equipment all contributed to a radically more potent way of delivering the good news to Jerry. And all of that in 27 years of 'force development' – well actually, the truth is nearer 23 years of not changing very much and four or five years of frantic innovation and transformation brought on by an overwhelming sense of not having it quite right as the BEF "withdrew" from Dunkirk. Necessity being the mother of invention and near defeat being the mother of the mother of… So the first point of substance is that it is better to change before the next major conflict rather than *during* the next conflict – 'nuff said.

Despite this, the current military mindset is sceptical about change – even an intellectually challenged turkey hesitates at the offer of voting for Christmas. There are three reasons for this "resistance to change" in my view. First is the "once bitten, twice shy" mindset that prevails in anyone once naïve enough to have enthusiastically welcomed a previous change-programme only to have their budget slashed with no compensating improvement. The second is the "old guard" mentality of those of us who joined the army during the Cold War. Force Development activity was largely unimportant as we sat on the North German Plain rehearsing for the 3rd Shock Army, hence we were not brought up "to think outside the box"; in fact we weren't allowed to move outside the box. Perhaps the most significant wake-up call came in 1982 with a swift jaunt to the Falklands that rekindled the notion of jointery and expeditionary operations and reawakened the requirement for an Operational level of command. To pick up on my earlier point about the differences in the army in the 27 years between the World Wars, it is now 22 years since we liberated the Malvinas, but we've hardly changed – smaller sure but logistically we are very similar. The third reason is the most important. We are far, far more operationally experienced now than we have been for decades and as such are instinctively wary of change – particularly change inspired by very clever be-suited business consultants – which threatens to increase operational risk. We are not a supermarket, we don't build cars and "Just –in-Time" is well… well it often just isn't.

For all this, some change is both necessary and inevitable

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[1] A similar, more REME-centric version of this article is due for publication soon in *The CRAFTSMAN* by REME's man in the DLTP – Lt Col Dave Golding. Any similarities between the two articles are most definitely not coincidental.

so despite natural and often well founded scepticism we need to embrace it and direct it effectively.

So what *exactly* is going on? Or, what the *FAZ* is it all about? The restructuring of the Army, consistent with changes in the RAF and RN, announced on 21 July 2004, is the result of a shed-load of thinking in recent years about the changing nature of conflict and our part in future operations. Re-balancing capability to deliver a heavy, medium and lightweight arsenal is considered essential in order to conduct brigade-sized *Rapid Effect* operations. The general idea is to be able to respond to an emerging crisis around the world quickly, to get in early with sufficient punch to diffuse or contain the situation and avoid the need for a full-scale conflict. Currently, we don't have much by way of a medium weight capability; Future Rapid Effect System (FRES) is in the pipeline – but still a long way off. *FAZ* will retain the ability to mix and match with heavy and light forces to suit the circumstances in addition to being able to ramp-up to Large-Scale if needs be. It's that golf-bag thing, where you get most use out of the 7-iron, of course you need a putter, but you only need the Big Dog driver when you've had a few shandies.

Consistent with this emerging future strategy, the Defence Logistics Transformation Programme (DLTP) has been formed to change the way all three services deliver logistic effect. The rationale for DLTP is straightforward. Most of our logistic services, structures, processes and training have been designed for the Cold War but have had to be tailored to deliver expeditionary logistic effect around the world since the early 90s. When the operational imperative wanes, logistic systems spring back into their default cold war setting. Bending the old model to fit each new expeditionary deployment is wasteful, time consuming and very expensive. We have all seen the inherent waste that builds up at the port of disembarkation by way of ISO towns as a Cold War supply chain responds to rapid expeditionary deployment demands. Operational success notwithstanding, there is some pretty worrying evidence from recent deployments that despite the more than adequate size of our logistic capability, we are struggling to deliver expeditionary logistics effectively. Given the trend that Notice to Move is tending towards Move Now, the need to change the way we deliver logistic effect is compelling.

Improving expeditionary logistic effect, *learning* lessons and doing something about them is what DLTP is all about. Delivering better value for money comes as part of this deal. Pandering to the bean-counters is often seized upon by the sceptics as the root cause of change and thus as good a reason as any to resist it. But this is different, sure we have to be seen to deliver better value for money but above all we have to deliver a more joined up and effective operational logistic capability. The current system isn't completely broken – we still manage to win our wars after all – but there is massive scope for improvement.

The End-to-End (E2E) logistic study in 2003 declared that our support chain is anything but an efficient straight-line tube from the supplier to the sapper. What a surprise. The reality is that current logistic processes are a convoluted, complicated spaghetti soup, which has evolved over time. Products and services fight their way through the jungle, getting held-up at every organizational boundary and are subject

to some pretty time-consuming administrative bureaucracy along the way. Cap badge and Service stove-piping just make matters worse. E2E went further – and with £10m worth of consultancy support so they should – and came up with a range of possible solutions. In short the study concluded that we need to comb the spaghetti back into fast, efficient straight lines; this sounds easy but, like combing knotted hair, it's likely to hurt a bit.

Conscious that E2E itself was at risk of becoming just another strand of tangled spaghetti, that team has now been subsumed into the far wider reaching DLTP. This larger team is drawn from all three services and now oversees all defence logistic change: from Whole Fleet Management, through Procurement Reform, to the much needed DLO Change Programme as well as a broad swathe of logistic Force Development thinking from each Service – Directed Logistics in the army for example. It has a broad and tough remit and has tremendous reach. Through necessity, defence logistics and logisticians are smartening up rapidly.

DLTP's reach into the fixed wing and rotary world has been deep and painful for all concerned and promises to deliver literally hundreds of millions in cash savings. So far, the Army – or more specifically the Land components – have come off pretty lightly and the majority of logistic transformation focus has been on force development and operational improvement rather than on finding "benefits". This list summarizes the original E2E Land initiatives which are currently being pushed by DLTP:

- **Priming Equipment Packs (PEPs).** Pre-deployment operational provisioning is currently ad hoc and generally poorly done. Despite the scaling skills and experience of unit personnel and formation G4 staff, units invariably take too much of the wrong stuff and lack what they really need. Under PEPs, all deploying units – including Field Support Squadron secondary depots – will be issued with a complete stores pack prior to deployment to increase initial in-theatre self-sufficiency until they can hook-up to an established supply chain. PEPs will be pre-scaled against hard evidence of actual operational and high intensity training consumption and formally earmarked by the supply chain at the end of each formation training year.
- **Whole Fleet Management (WFM)**. A hopefully well understood if not yet widely supported initiative to manage our inadequate

vehicle fleets more efficiently.

- **All-Arms Echelon Re-balancing.** Combing back logistic personnel and equipment from 1st to 2nd line in order to make manoeuvre units lighter and more agile, concentrating logistic effort within more responsive and flexible 2nd line units and reducing the overall deployed footprint to improve strategic mobility.
- **Off-Platform Repair**. The long-term intent is to further reduce the deployed footprint by removing the need to conduct power pack, LRU and optronics repair in-theatre. The first step will be to draw back these repair facilities from the manoeuvre brigade into the force rear area.
- **Withdraw Barrack Stocks.** Combing back a large slice of the £160m plus worth of stocks currently held on unit QM shelves – and thus lost to the supply chain. In future, units will hold an irreducible minimum stock of fast moving items and rely on a 5-day (maximum) delivery service from the depot. Despite the smirks this aspiration raises, it does now seem to be achievable within the next year.
- **Fix the Joint Expeditionary Supply Chain.** A non-trivial task, particularly when there are many people embedded deep within the Supply Chain who insist that it works just fine the way it is! Pilot projects in Iraq and the Balkans have already proved that several days can be cut off pipeline delivery times simply by streamlining in-theatre logistic processes. Better IT and tracking will make things better still but don't hold your breath.
- **Apply Lean Techniques**. A concept well understood and adopted by most class leading industries (I know, I know – we're not running a supermarket) and one that really can be adapted to increase operational effect, particularly in logistics delivery. *Lean* focuses the whole support process onto the mission requirement and removes anything that doesn't add value. We tried it on the WARRIOR base overhaul process last year and reduced the repair loop from 80 vehicles to 32 – giving 48 Warriors back to the Field Army and reducing the cost of the programme by £3.5M per year. DLTP is now looking to broaden lean thinking into the operational environment. The theory is sound; making it work will be a challenge.
- **ES Materiel**. The intent is to find a more effective way of controlling spares on the battlefield to reduce delay and increase equipment availability.

So where does all this leave the Corps? Clearly not every DLTP initiative (there are 128 in the LAND environment alone) will survive first contact; some of the earlier ideas were positively barking and have been quietly dropped already. But on the whole those that remain will improve operational capability. Many of them will be good for the Corps – particularly if we are able and willing to embrace them and actively seek to influence their course. RE unit and secondary depot (Field Support Squadrons) PEPs, for example, if properly scaled will massively improve the way that we pre-stock our units for deployment. But if we leave that scaling to non-RE logisticians the PEPs will be useless. There has been much talk over recent years about pre-configuring demolition and minefield packs within depots or even within industry. The usual response has been that this would be either cost prohibitive or too difficult for the RLC to manage. Both spurious arguments, and if the Corps really believes that such an initiative will streamline the supply chain and enhance operational effect now is the time to resurrect the argument and push hard for change. The door is not wide open but it is ajar. Similar changes are required in the way we deliver tactical fuel handling equipment on operations, provide workshop support – what workshop support? – repair airfields, build field hospitals and train our logisticians. Why not adopt a *Lean* approach to some combat engineer tasks – saving money need not be the driver but cutting time or manpower off the task certainly should be.

There is risk too. As DLTP spreads its wings and seeks out new opportunities – for improving capability and saving cash – it will inevitably look hard at the Corps because we are big spenders and consumers on operations and in barracks. Some of the old battles – not all purely logistic – may have to be fought afresh. For example:

- Why do the Sappers need their own driver trade, resources specialists and signallers?
- Why do those people also need to be given expensive combat engineer and trade training?
- Why is the EOD capability split between the RE and RLC and the RAF and Navy for that matter?
- Why do we run bespoke engineer parks and workshops rather than rely on the single supply chain or REME artisans?
- Why don't we outsource more of our technical infrastructure engineering capability to industry?
- Why is small boat training done at Chatham (RE), Poole (RM) and Marchwoood (RLC)?
- If we claim that engineer logistics is so special why do we pay lip service to the way we select and train our officers to operate in the joint logistics arena?
- And why do we always seem to have the smartest signs on operations and paint everything we make red and blue?

Conclusion

OK so what is my point? The sharper minds will have spotted a trend here and a mild dig at the Corps. Nearly a third of the deployable arm of the Corps is directly or indirectly engaged in providing logistic support and almost every operational task the Corps undertakes requires specialist[2] logistic input. Change, though not always palatable, is inevitable and logistic change is accelerating away at a tremendous pace. The Corps cannot afford to sit back and be customers of that change, but must positively engage and influence it. Logisticians – RLC, RAF, Navy and RM, are driving logistic transformation and I fear that we have too few Sapper officers able or willing to engage and shape that change. Sadly we have even fewer being actively groomed to engage on an equal footing with the sharpest of the loggie set in the future. Dare I say that we need to (re)establish a senior logistic focus within the Corps to act as a mentor for logistic transformation. The demise of the Colonel Engineer Logistics post at HQ LAND has not done us any favours.

[1] Over and above routine logistic provisioning and re-supply.

A Very Different D Day

WARTIME CAPTAIN S A SKINNER FRICS

Stanley Arthur Skinner was born in Taunton, Somerset. After grammar school he became a student surveyor and was thus able to volunteer for direct entry to the Royal Engineers in 1943. After sapper training at No. 1 TBRE Clitheroe and OCTU, he was commissioned in 1944 and immediately posted to India and seconded to the Indian Engineers. Demobilized in 1947, he resumed his studies and, after qualifying, worked for a number of private practices and in Local Government.

THE recently publicized memories of those involved in the Normandy landings reminded me how fortunate I was not to have been one of them. However, whilst the war in Europe had ended in May 1945, in the Far East we still had the Japanese to contend with. The Americans were preparing to invade the Japanese homeland at the island of Honshu, whilst Lord Louis Mountbatten as CinC of SEAC was planning to invade and recapture Malaya and Singapore. Operation *Zipper* would land 182,000 troops; 17,000 vehicles, and 225,000 tons of supplies on the West coast of Malaya. This was planned for late August 1945 despite Mountbatten being denied a number of promised landing craft, and by Clement Attlee shortening overseas service thus depriving him of some 32,000 experienced troops. Part of the *Zipper* force was already at sea when the dropping of the atomic bombs precipitated the Japanese surrender, nevertheless Mountbatten decided to proceed with the beach landing on 9 September even though port facilities had become available. In fact Lt Wensley (who later became my wife), a QA Sister and a member of the RAPWI Control Staff (Repatriation of Allied Prisoners of War and Internees), was on board a hospital ship which berthed at Singapore on 5 September, four days before the landing at Morib.

My own Indian Engineer plant unit had been withdrawn from Burma to Madras to be re-equipped with new machines and vehicles. We sailed from there to rendezvous with others from several different ports in India and from Rangoon. I was due to disembark at H hour plus six minutes and to proceed some six miles inland to repair any damage to an airstrip so it would be ready to receive fighter cover from an aircraft carrier.

We were held back for some time due to chaos on the beach where vehicles were breaking through the thin crust of sand to be bogged down in mud. The REME Beach Recovery Unit had very quickly lost its vehicles and we were commandeered by the Beachmaster to work on recovery, the airstrip having proved to be undamaged. We then lost three tractors to the rising tide but managed to salvage them the next day. We spent several days trying to rescue trucks but most of them were lost due to immersion. I heard a rumour later that some 400 vehicles were written off. More serious though was the loss of life when a landing craft beached on a sandbank and over a hundred Punjabi infantrymen were drowned when they stepped off into deep water.

The beach was clearly unsuitable for a landing and had been ill chosen without sufficient investigation. Had the Japanese troops who were waiting there to receive us opposed the landing, it is probable that I would not have lived to write this and the operation might well have been a disaster on at least the scale of Dieppe. Based on the known knowledge of the Japanese resolve to fight to the death, estimates of the anticipated casualties in a seizure of Singapore and an invasion of Japan exceeded half a million dead.

The survival of many Allied fighting men and the Japanese who might have died in millions provided the phrase *"A Miracle of Deliverance"* taken from Churchill's expression of relief when he heard that an atomic weapon had been successfully tested.

This is also the title of Stephen Harper's book on *Zipper* and the case for the bombing of Hiroshima and Nagasaki published in 1994, but probably now out of print.

As a footnote, it appears that there was very little coverage of this debacle in the British media and no photographs could be found by Stephen Harper either in the Army or Public records, even though official photographers were apparently present. Presumably any pictures were hidden or destroyed in order to avoid embarrassment

ADDENDUM

YOUNGER readers may not be aware that, up to and including the second world war, the Indian Army was almost entirely commanded by British officers, although Indian officer cadets were being trained at the Indian Army Academy, Dehra Dun and at a wartime OCTU in Bangalore. Indian Engineer officers, however were extremely rare. The pre-war Sappers and Miners (Bombay, Madras and Bengal) inherited from the old East India Company became the nucleus of the Corps of Indian Engineers, (Briefly Royal from 1946 until Independence), when specialist Groups were created, for example my own No 6 Group Mechanical Equipment (Plant).

As well as the pre-war regular officers who may have chosen to serve in India, I was one of the many thousands of wartime officers compulsorily seconded to serve there.

Sixty Years Ago – Italy 1944/45

MAJOR H G BELL MBE MA CEng FIHT MICE

Hubert Graham Bell was born on 18 December 1919 and was educated at Bristol Grammar School. He was in the last batch do to the full eighteen months course at the Royal Military Academy, Woolwich, prior to World War 2 and was commissioned on 1 July 1939.

Regimental appointments in 61st Division in Northern Ireland and England included Adjutant and OC Field Park Company. In August 1943 he was posted to North Africa as a bridging instructor, moving with the training school later that year to Capua in Italy.

He joined 8th Indian Division as Adjutant RE during the battle of Cassino and served with the Division during the advance up Italy until January 1945 when he was promoted to major and posted to HQ 8th Army as GSO2(SD). He was awarded the MBE for his service in 1944.

After training at the Staff College, Haifa, and a year with the British Military Mission to Greece he went to St. John's College, Cambridge, to take an honours degree in mechanical sciences, followed by a G2 staff job at HQ Southern Command.

In late 1951 he was posted to Malaya as OC Malayan Engineer Squadron then later as OC 78 Malayan Field Park Squadron. In 1954 the work of the Squadron mainly concerned the construction of airstrips at jungle forts for the Malayan Police, for which Major Bell was Mentioned in Dispatches.

In between staff jobs in Wilton and Edinburgh he spent two years at the Military Engineering Experimental Establishment (MEXE), Christchurch, evaluating soil stabilisation equipment.

Major Bell retired from the Army on 1 July 1960 after twenty one years service.

1944 was a momentous year on account of all that happened during that year and for me it was one of the most exacting and interesting periods of the whole of my twenty-one years in the Army. I did not keep a diary and so have had to rely on my memory for what I have written.

Capua

In January 1944 I was just 24 years of age, my rank was captain and my job was as an instructor at a bridging school that had been moved from North Africa to Capua, thirty odd kilometres North of Naples. We had landed at Taranto and moved by train to Naples. The journey took 36 hours, including a long stay in some marshalling yards at Potenza. I don't know what we fed on but I do know we drank tea made with boiling water drawn from the boiler of the steam locomotive whilst we were stationary.

I started to learn Italian from a 16 year old girl who lived next to where I was billeted.She spoke a bit of French but no English and so I learned Italian in French, as well as a little bit of Neapolitan which the Northern Italians regard as quite ghastly.

In February 1944 we went out one night to see and listen to what we thought was an air raid on the shipping in Naples harbour but the next day we realized that Vesuvius was having a major eruption – it has proved to be the last major one to this day. The tremendous column of ash was an awesome sight and the sheer volume of it seemed unbelievable. It was reported that an Italian family had been killed when the weight of ash on the roof of their house had caused it to collapse on them – **and they lived many miles from Vesuvius!**

A few days later a visit to Pompeii was organized by the Army Education Corps and it was quite startling to be there with ash from Vesuvius falling on us, wondering all the time if the events of AD 79 were going to be repeated.

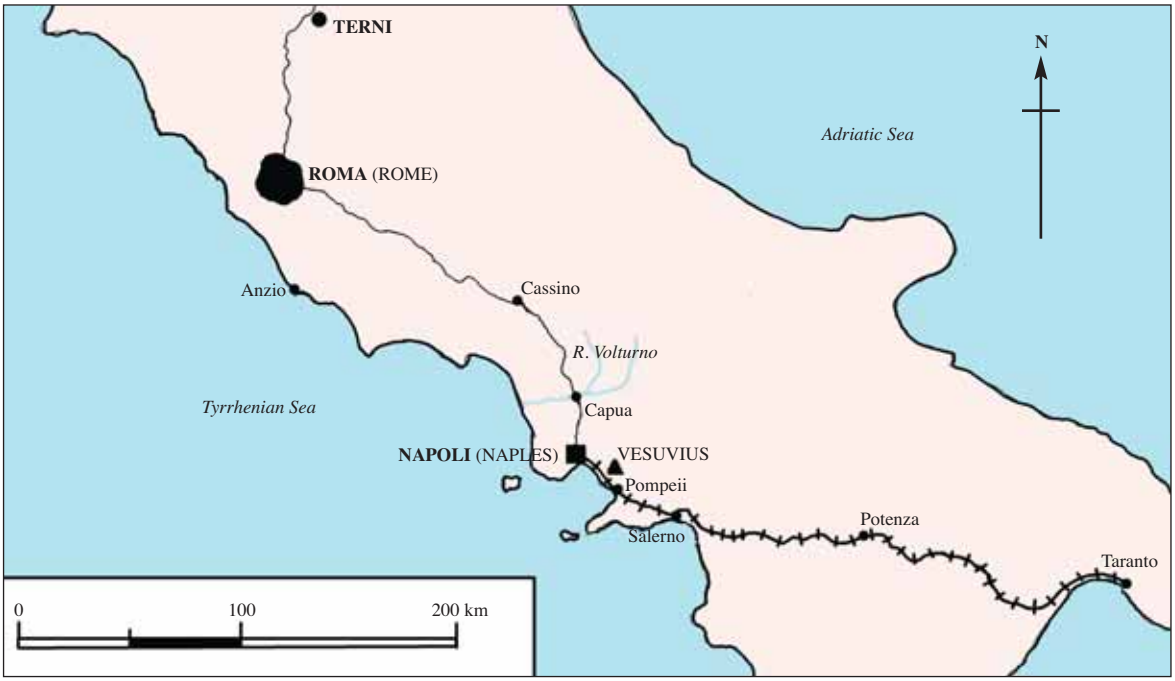
A year and a half later when I was at the Staff College in Haifa I used to see wonderful coloured sunsets over the Mediterranean due to the dust from the eruption of Vesuvius still present in the upper atmosphere.

The training at Capua mainly concerned Bailey pontoon bridging on the river Volturno, a river which could and did rise thirty feet overnight in times of heavy rain. We got caught out on one occasion when the river rose like this. The current was estimated to be doing about eleven knots and although the anchors of the pontoons seemed to be holding they were no match for large tree trunks that came downriver like battering rams smashing into the bridge.

Cassino

Soon after that I was posted as Adjutant to the Bengal Sappers and Miners of 8th Indian Division in the middle of the battle of Cassino. The CRE, Lieutenant Colonel Pat Kirwan, had been killed by shellfire in the middle of Divisional HQ and his successor, Lieutenant Colonel B M Archibald, who had been one of my students at the bridging school had asked for me to be posted there. On arrival there the men dug a slit trench for my camp bed saying "Sahib, this is for your charpoy so that you do not get hit by shell splinters, but if you do then we shall already have dug your grave"

So I had the odd distinction of being in the Indian Army without ever having been to India. I was put on Indian Army rates of pay that was paid by the Army Paymaster in Meerut



Southern Italy (Part).

into an account that I had to open with Lloyds Bank in Bombay. This pay then got transferred into my account with Lloyds at 6 Pall Mall, London.

As had always been the custom, the officers were required to be fluent in Urdu and the men were not required to speak or understand English, other than the office clerks. As I did not know a single word of Urdu this posed quite a problem when I was given a Hindu batman. However, he had been serving in Italy for some time and had picked up a few words of Italian and so we compromised by me communicating with him in Italian.

In those days I used to shave with an old-fashioned cut-throat razor and had two of them. One evening to everyone's horror my batman had been drinking and ran amok through the camp with one of my razors in each hand. Fortunately nobody got hurt and I was relieved to get my razors back undamaged.

One of the first bits of Urdu that I **did** learn was *"Asti jahu"* (Drive slowly) when being driven fast in a jeep down a winding mountain road at night with no vehicle lights and only a little bit of moonlight. I rather gathered that the driver's reply more or less meant "Allah will protect me, but you as an infidel will have to take pot luck."

Each Field Company had a platoon of Sikhs, a platoon of Hindus and a Platoon of Punjabi Mussulmen (PM) but the Field Park Company men were all PM.

The office vehicle had been converted from a White scout car by the Field Park Company, with roof and upper sides complete with plate glass windows removed from an Italian railway carriage and also with fitted desks. I had my camp bed under a canvas awning at the side of the office and for the next nine months never slept in a building.

The Intelligence Officer, Lt Felix Stapleton, spoke fluent German and used to listen to enemy unit radio transmissions. One day when a German artillery commander had been giving details of targets to be engaged, as soon as he had finished Felix switched to "transmit" and said in German "Cancel last target." Later in the day he enjoyed listening to the acrimonious radio exchanges between the two German units as to why the target had not been shelled.

After the breakthrough at Cassino the Division moved rapidly northwards. I think we advanced about 250 miles in one month. The work of the Divisional Engineers was primarily mine clearance and bridging.

Mine Clearance

SOME roads had been cratered and were frequently mined, especially at the approaches to demolished bridges. When buildings had also been demolished onto a mined road there was the danger of our bulldozer being blown up, as happened later on in Florence.

The mines encountered were the same as in North Africa, Tellermines, S mines and wooden schu mines. Previous experience had shown that sometimes the Germans booby-trapped a proportion of their mines, but despite this knowledge we suffered fatal casualties. One Field Company lost all but one of their junior officers in one week, one of them killed by shellfire, the others killed clearing mines. One other officer had his foot blown off by a schu mine.

A Sikh sapper using a mine detector and concentrating on nothing else but trying to listen to the earphones through layer on layer of turban suddenly realised he was within a few yards of several Germans in a slit trench who had been watching him with the bemused inaction of a rabbit mesmerised by a stoat. Putting down the mine detector and unslinging his rifle from his shoulder he took them prisoner.

Bridging

A LARGE number of road bridges had been thoroughly demolished and so we used a lot of Bailey Bridge equipment, often averaging five hundred tons of it every week.

Prior to my joining the Division one particular demolished bridge had had a very restricted access with insufficient space on the near bank for the normal construction of a Bailey Bridge so the reconnaissance report said that it was impossible to replace it with a Bailey. Nothing daunted, the men of the Field Company waded through the river carrying all the bits needed and then built the bridge from the far bank. One should remember that each Bailey panel was a six-man load, so a great amount of physical effort was needed for doing all this. On completion they proudly put a name board on the bridge :-

THE
IMPOSSIBLE
BRIDGE

Bridge sites were normally under enemy observation and fire so that reconnaissance in daylight was both dangerous and difficult, with the added problem of uncleared mined approaches. This led to some inaccurate guesses as to the length of bridge needed, so that in the middle of a night bridging operation I would get a radio call from a Company Commander asking for more equipment urgently. "I thought we could get away with an eighty foot double-single but find we need a hundred and ten foot triple-single."

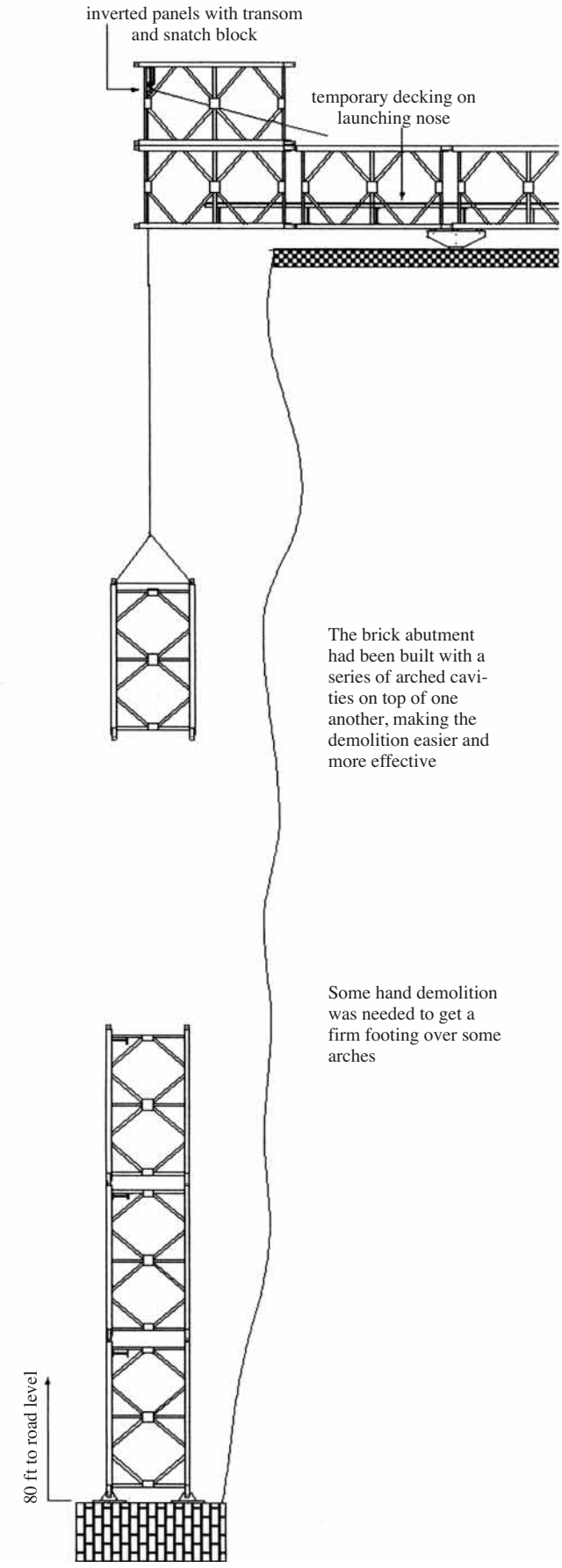
One officer told me that when he was actually able to get to the near side of the gap he picked up a stone about the size of a cricket ball and threw it across, from which he deduced that the gap was about the length of a cricket pitch. Earlier, at Cassino, a subaltern had stripped off and swum across the River Rapido at night taking one end of a measuring tape with him. Based on his measurements he organised an assault bridge of Bailey parts mounted on a turretless tank. This operated successfully in getting tanks across the Rapido but sadly that officer died of wounds received in the crossing operation.

Because of my recent experience with Bailey Bridge equipment I was sometimes asked to help on site. I had also developed the knack of walking upright on top of the single panel width (seven inches) of the launching nose to get to the far side. Once when doing this I found the Corps Commander, General Dempsey, watching me from the far bank. Still standing on the launching nose I saluted him and he then said

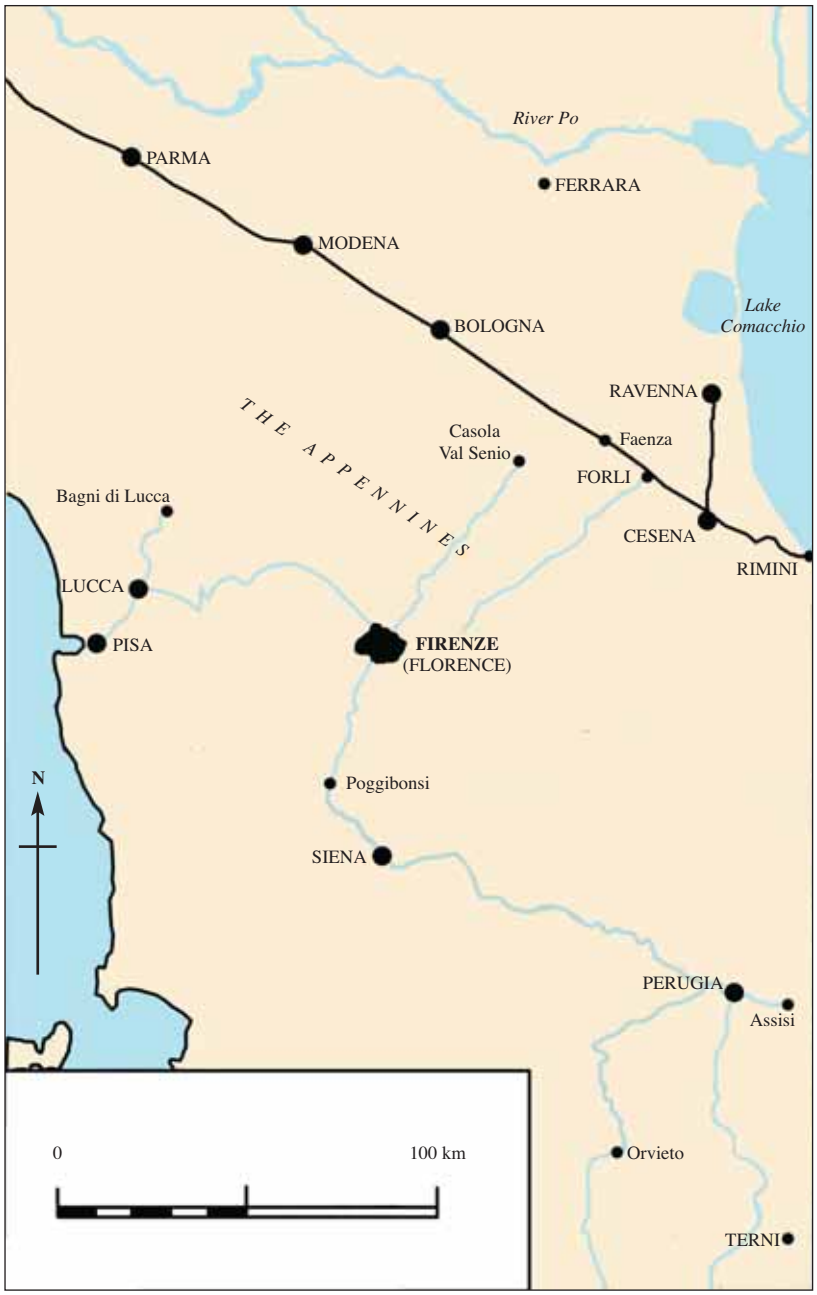
"Young man, how do I get back across this river **other than** the way you have just come across ?"

A two-span Bailey with a central Bailey pier was giving a bit of trouble with the launching rollers on top of the pier so the officer in charge took a party of men to jack up on the pier to get things right. On return to the near bank he remembered having left a podger spanner jambed in one of the rollers so he detailed one of the sappers to retrieve it. Minutes later a flash flood estimated to be fifteen feet high came fast down the river, washed out the pier and the bridge collapsed. The body of the sapper was never found but casualties would have been much higher if the flood had come half an hour earlier when the jacking party was on the pier.

The demolition of a very high brick arch bridge had removed so much of the near side abutment that an eighty feet high pier of vertical Bailey panels was needed. We put temporary decking on the launching nose with extra inverted panels and a transom above the nose so that we were able to



Construction of Bailey Bridge pier, Casola Val Senio, December 1944.



Northern Italy (Part).

use it as a "skyhook" to lower the materials for the pier down to the construction party. This was a most interesting bridge to build.

Rome and Beyond

Rome was declared to be an open city, the Germans withdrew and the Allies entered on June 4th, two days before the Allied landings in Normandy. Two or three days later I was fortunate to be selected as one of a small group of Catholic officers to attend a private audience with His Holiness Pope Pius XII

We advanced up the centre of Italy through Orvieto and Poggibonsi to Florence. Poggibonsi was completely destroyed. Bulldozers levelled out a roadway through the rubble so that we were driving at about the level of where the first floor windows had been.

One Sunday morning I found myself near Assisi and was able to nip in there to hear Mass in the crypt of the cathedral.

During the summer His Majesty King George VI came to Italy to visit the troops and I was present at a parade in a field somewhere in Italy when the King presented VCs and other medals to some of the Gurkha and Indian troops. As it was only three years later that Indian Independence took place I doubt if ever again was heard what the Divisional Commander called out at the end of the parade :-

"Three cheers for His Majesty the King Emperor"

In Florence the Germans had demolished all the bridges over the River Arno except for the Ponte Vecchio. There they had demolished a street of houses on the approach to the bridge and one of our Companies was clearing this away. This was when the bulldozer got blown up. Although the Germans had had sentries on the Ponte Vecchio they hadn't twigged that it was a two-storey bridge and so the partisans had been using the upper storey, even – so I was told – laying a telephone line there to the nearest British HQ.

When we were in the area of Forli and Faenza I was told that some prisoners of war who had been conscripted into the German Army from occupied countries had been taken down to Rimini, stripped of their uniform and issued with battle dress then sent as reinforcements for 2nd Polish Corps. One story at that time was of a military policeman who to his surprise found a man in German uniform queueing with British soldiers outside a cinema. The man next to him said "It's alright, Corporal, he's with me but he hasn't yet been issued with battledress."

After reaching Forli the Division was moved further to the West so that by Christmas 1944 I was up in the Appenines at a small place called Casola Val Senio where we had built the high level bridge described above.

On Christmas Day I spent fifteen hours driving a staff car in convoy as we had been ordered to move further West to Bagni di Lucca. Like so many roads in Italy our mountain road had been badly pot-holed by military traffic but compacted snow had filled most of the pot-holes so driving at a sedate convoy speed wasn't too bad. It enabled me to steer with one hand on the wheel while the other hand held a glass of sherry. Being in a car was not going to spoil my Christmas! The officer sitting next to me opened a tin of turkey and spoon-fed me while we drove. It reminds me that some of the American drivers of their large two and a half ton trucks would have a row of tins of meat and vegetable stew wired to the exhaust manifold to heat them.

Ponte Vecchio, Florence. The Italian partisans moved to and fro in the upper corridor to bypass the German senties on the bridge.

HQ Eighth Army

In January 1945 I was promoted to major as a staff officer at HQ Eighth Army and took over from Major Horatio Nelson. He had a comfortable caravan that included both an office and a bedroom. On his desk were three trays marked IN, OUT and TOO DIFFICULT. On my enquiring about the third one he pointed to a pencil line in the tray three quarters of an inch from the bottom and told me that every six weeks he destroyed all papers below the line as obviously nobody wanted an answer. If before the six weeks he received a reminder about something there then he took it out and dealt with it. If only all office work could be that simple!

As part of the Spring offensive of 1945 it was planned that a group of amphibious duplex-drive tanks (that is, tracks and propellers) would make a surprise attack across Lake Comacchio. The tanks were brought to the site in great secrecy but when they were launched they merely floundered in the mud because nobody had thought to check that the lake was deep enough for them to swim. It was not.

One has heard a lot about tragic incidents of so-called "friendly fire" but this is far from being a recent occurrence. For the final assault across the River Po a large saturation bombing of the German positions North of the river was carried out in daylight by the American Air Force. At that time the Americans reckoned that their bomb aiming sight was the most sophisticated and accurate one in the world, but yet they managed to drop a large number of bombs on the Poles who were South of the river, causing a lot of casualties.

In these present days of fully mechanized armies it is interesting to recall that in the Second World War the German Army used a lot of horse-drawn transport and in Italy they requisitioned many farm horses. After the crossing of the River Po it was said that in addition to human casualties there were something like ten thousand dead horses.

One day I happened to meet Captain Simpson RE, who had been a contemporary of mine at The Shop. A few days later I tried to contact him again but was told that he was dead. Apparently his unit had collected a lot of unexploded German ordnance in a tent and also had their own explosives in another tent nearby. While Simpson and his OC were inspecting these stores the entire lot detonated, killing not only the two officers but also so many men of the unit that it was then disbanded.

Soon after that I was surprised to see several German staff cars parked outside the HQ. They belonged to the delegation that had come to negotiate the surrender of the German Army in Italy.

So in 2005 we shall be celebrating the sixtieth anniversary of the liberation of the whole of Italy and we should all remember the cost of that liberation in human lives. There are 44,000 Allied service people buried in Italy – British, New Zealanders, Canadians, South Africans, Poles, Indians, etc.

During the campaign in North Africa the troops came to like the song Lili Marlene being played by German radio and when in June 1944 some idiot in England referred to the Army in Italy as "D-Day Dodgers" they made up words to fit the tune on the lines of "We are the D-day Dodgers who fight in Italy". It was a disgraceful insult to battle-hardened troops who had fought their way from El Alamein, defeated the German Army in North Africa, occupied Sicily and won a bloody foothold in Italy at Salerno and Anzio..

The last verse is more sombre and goes something like this:-

> "Look along the hillside in the mist and rain,
> see the rows of crosses, some without a name,
> they **were** the D-Day dodgers
> who stayed in Italy."

Acronyms, Abbreviations and Aircraft Carriers!

CAPTAIN S M PEMBERTON

Captain Stu Pemberton joined the Corps as Junior Leader in 1977 before moving to 38 Engineer Regiment in 1978. There followed tours in Northern Ireland and Belize before taking part in Op Corporate. *Next posting was to 33 Independent Field Squadron RE for a two year tour in Northern Ireland followed by seven years of service with the then 28 Amphibious Engineer Regiment. In 1992 he moved to Military Works Force and in 1993 to 25 Engineer Regiment that had recently arrived in Northern Ireland. During this tour he was compulsorily transferred to the AGC (SPS). In 1995 he was posted to Liverpool for a tour with 208 Field Hospital (V) from where he was posted to the Manning and Establishments Branch of Military Survey. In 1998 he was successfully commissioned back into the Corps and posted to be 2IC 63 Training Support Squadron RE at Minley. This was to be a short tour as he was again moved to fill the vacant SO2 Soldier Postings Branch appointment at RE MCM Div. In 2001 he took up the post of QM 23 Amphibious Engineer Squadron and accompanied that unit to Iraq during Op* Telic, *from where he moved into his current post as SO3 (Infrastructure) in HQ Hohne Garrison.*

If you think the title of this article is a little confusing then you should have been inside my head after my first day as a Staff Officer in Headquarters 7th Armoured Brigade, or more accurately, Headquarters Hohne Garrison.

To make it clear, I'll set the scene. I received a Posting Order in December 2002 to report to Hohne in May 2003 to take up the new and recently established post of SO3 (Infrastructure). The then Deputy Commander (Colonel Chris Haskell, late RE) sent me a copy of the Job Description. The post carried with it responsibilities that cut across the entire G1 – G9 spectrum, along with "scope for further development". After a brief interlude, during which I went on a sunshine holiday to Iraq with 23 Amphibious Engineer Squadron, I made my way to Hohne.

You would think that after 27 plus years of service the first day in a new job would not be so daunting, but my bladder was telling me different. I need not have worried, as the Headquarters resembled a ghost town due to the majority of staff still being away "lording it" in the Royal Palace in Basra. After an initial orientation of the Headquarters, that involved avoiding mounds of rubble from the rebuilding work being undertaken at the time, we settled down to the first briefing.

Notebook in hand, pen poised, I listened attentively (over the noise of the drilling) as the SO2 (Plans) explained the correlation between 7th Armoured Brigade and Headquarters Hohne Garrison. The analogy he selected was the relationship between an Aircraft Carrier and its aircraft. "You see," he started, "the aircraft take off take from the carrier," at this point he flattened his hand, to represent an aircraft. His hand then taxied forward across the desk and as he made the noise of an aircraft increasing power. His hand darted forward and took off from the imaginary deck of his carrier. "We, the Garrison," he went on "maintain our course (like the carrier) until the aircraft return", with which he landed his hand on the deck (desk!). I looked down at my notebook to recap but had written nothing yet, although I must admit he had made the point succinctly. "So what you are saying is that we maintain the infrastructure when the Brigade deploys?" I asked, for clarity. "Yes," he replied. He then highlighted his responsibilities that included; Briefs, Reports, Quarterly Returns, Management Statistics, Financial Planning . . . . . my mind was wandering, so I interrupted and asked if I had any involvement in this. "No" he said, so I rested my pen.

Later that morning I was introduced to the Deputy Garrison Commander who informed me that in his multi-hatted role he was also the Station Commander of Hohne, Celle and Fallingbostel Stations. He went on to explain that the Brigade Commander is also the Garrison Commander, with the senior Commanding Officer in the Brigade filling the role of Deputy Brigade Commander!

The Colonel went on to describe the Garrison Headquarters' relationship with UKSC (G) and how that Headquarters played the same role with 1 (UK) Armd Div as we did with 7th Armd Bde (The Aircraft Carrier and Aircraft thing again). Finally, he explained the different and very diverse component parts that make up Hohne Garrison that included; SLO, SSO, DRSD, PROM, GWA, GTO, RHD, RMP, AWS etc.

"What do you know about SHEF?" asked the Colonel out of the blue. "Very little," I replied, relieved that he had not paused long enough for me to fall into what appeared to be a well-baited trap. To be honest, I had almost given the obvious answer, but before I could embarrass myself he explained that this acronym stood for Safety, Health, Environmental Protection, Energy Efficiency (the silent 'E') and Fire. "We have a number of advisors in the Garrison," he continued, "and they will form the SHEF Organisation under your control as the Garrison SHEF FP. You have the GHSWA, GEEA, ADFA and an Enman." "Alongside SHEF you must focus on PAYD for which Fallingbostel has been selected as the second BA (G) Trial Site. You will be the FP for this and will need to form an IPT from across the garrison. The CMT (who is due to arrive in August) will become joint IPT FP and focus on specific requirements from UKSC (G) ISST and PAYD UK.

She will also look after CMSC that is managed by NSS who are a subsidiary of ESS and in partnership with NAAFI – any questions so far?" My pen was overheating and I was trying to imagine what language the Deputy was speaking. "No," I heard myself say, and instantly realized I needed to absorb myself in the subject files – quickly.

No problem thought I, and proceeded to ask the Garrison CC to produce all the files on SHEF and PAYD. Imagine then, if you will, my consternation when I started reading about the establishments for Kitchen Staff and Contracts from NSS, none of which seemed to be specifically to do with SHEF or PAYD. Never mind, thought I, and continued to read on. After an hour and several files later, and with an increased knowledge of CCM and alternative menus, it dawned on me that an error might have occurred. I questioned the CC and realized she had no idea what the acronym SHEF stood for. So she had taken the bait; hook, line and sinker, and produced every file on "Chefs". Of course this is an easy mistake and I had enjoyed reading the Garrison's supply of files on Catering Matters!

As the first working day drew to a close, I studied my notes and tried to make sense of what I had been told during the past hours. The pages were filled with acronyms and abbreviations that allegedly covered the majority of my new responsibilities, including SHEF FP, PAYD FP, CLO, EOO, WM DO and Gar Adjt. But uncannily, I was drawn back to the Aircraft Carrier and SO2 (Plans') prodigious demonstration. I knew it was time to leave for the day and a well-deserved B.E.E.R!

Glossary of Acronyms and Abbreviations:

ADFA	Army Department Fire Advisor
B.E.E.R.	Balanced Energy Efficiency Rejuvenator
CC	Chief Clerk
CLO	Civil Labour Officer
CMM	Corps Catering Manpower (Chefs)
CMSC	Catering and Manpower Services Contract
CMT	Contracts Monitor
DRSD	Defence Regional Storage Depot
Enman	Energy Manager
EOO	Equal Opportunities Officer
ESS	Eurest Support Services
FP	Focal Point
Gar Adjt	Garrison Adjutant
GEEA	Garrison Environmental Advisor
GHSWA	Garrison Health and Safety at Work Advisor
GWA	Garrison Works Alliance
IPT	Integrated Project Team
ISST	Integrated Service Support Team
NSS	NAAFI Support Services
PAYD	Pay as You Dine
PROM	Property Manager
RHD	Regional Health Department
SHEF	Safety, Healthy, Environmental Protection, Energy Efficiency and Fire.
SLO	Services Liaison Office
SSO	Station Staff Officer
UKSC (G)	United Kingdom Support Command (Germany)
WM DO	Waste Management Designated Officer

Could They Really Sue Us For Doing That?

MAJOR M P WALTON-KNIGHT BEng MSc CEng EurIng MICE MCIWEM

Major Matthew Walton-Knight has just completed his tour as Officer Commanding 5 Field Squadron. He took command in Bosnia-Herzegovina on Operation Palatine *in August 2002. Returning to the UK the Squadron provided a fire and rescue service to Bradford on Operation* Fresco*, which was immediately followed by the Training Year compressed into six months, before it deployed to BATUS for two months as the 1-2-1 close support squadron supporting an armoured infantry battle group; it also squeezed in two trips to South Africa, one to Kenya and adventurous training in Australia. After a brief respite, the Squadron deployed to Iraq on Operation* Telic 4 *in April, which is where this article was written. In Iraq, among other responsibilities, the Squadron was the lead on progressing the development of Southern Iraq's sewage infrastructure. Being a Chartered Engineer, Major Walton-Knight gets a second command tour; in August 2004 he took over command of 535 Specialist Team Royal Engineers (Works) in Northern Ireland.*

I sit here in Basrah re-reading the warning notice I have just served on a sewage suction tanker that had dumped its load of sewage sludge on the roadside rather than at Hamden Sewage Treatment Works in Basrah. I do not know from where the tanker collected its load, maybe from a civilian cesspit, maybe from a British Forces base; however in this new post-occupation Iraq that is growing around us, I wondered if they could, would they sue us for the health hazard or for the environmental damage that suction tanker had just caused if it was working under contract for British Forces, especially as much of the sewage that is dumped was seeping into channels from which we know children drink?

Sewage can be a significant hazard to human health. Worldwide nearly two million children die each year from diarrhoea and at any one time nearly 1.5 billion people suffer from parasitic worm infestations. A cholera outbreak in Peru in the early 1990s cost their economy US $1 billion in lost tourism and exports in just 10 weeks. These events all stem from faecal contamination; the principal means of preventing events of this type is through the safe disposal of sewage, something that is barely occurring in Basrah at present.

Those of you that are familiar with operations in Northern Ireland will appreciate the culture of litigation the Army frequently has to operate within. Claims there for alleged harassment, verbal abuse, damages, illegal arrest and detention abound, although they are dircted more at the industry, than engineers.

Recent legal cases also demonstrate that UK based organizations, even the Ministry of Defence (MOD) face the prospect of being pursued in UK courts for damages if they cause death, injury or environmental damage outside of the UK. Although a claim may be unlikely when conducting a peace

تحـذيـر

اخي السائق صهريج مياه المجاري

تم القبض عليك من قبل قوات التحالف
تفريغك لمياه المجاري بطريقة غير قانونية غير مقبول وخطر
على صحة اهالي البصرة الكرام .

يجب عليك التخلص من مياه المجاري بالموقع التالي :

محطة حمدان لتصفية المياه

هذا الموقع يقع على طريق رقم(6)
باتجاه الجنوب الشرقي لقضاء ابو الخصيب .

ستؤخذ لك صورة وتدون جميع معلوماتك وتحول للسلطات
المعنية.
واذا قبض عليك مرة اخرى سوف تعتقل وستصادر مركبتك.

بتفريغك مياه المجاري في محطة حمدان لمعالجة المياه ترفع
من نوعية الحياة لجميع اهالي البصرة من ضمنهم انت
وعائلتك.

نشكرك جزيل الشكر لتعاونك وننظر معا للامام لنتعاون لجعل
البصرة مدينة نظيفة كي نتفاخر بها.

قوات التحالف.

Warning notice in Arabic.

WARNING

YOU HAVE BEEN CAUGHT BY COALITION FORCES
ILEGALLY DUMPING SEWAGE

This is not acceptable and is a health hazard to the population of Basrah

YOU MUST dispose of sewage at the following place

HAMDAM WATER TREATMENT PLANT (grid QU 38R 741723- point out if necessary)

This is located on Route 6 heading southeast towards Abu Al Khasib

Your details and a photo will be taken and passed on to the relevant authorities

If you are caught again your vehicle will be confiscated and you will be arrested!

Depositing sewage at Haman Water Treatment Plant helps improve the quality of life for all Basrah's citizens including you and your children. Your cooperation is greatly appreciated as we all look forward to helping make Basrah a clean city that you can be proud of.

Warning notice in English.

support operation, it would not be impossible. A pragmatic policy to minimize litigation is to apply UK standards where reasonably practicable, in addition to complying with relevant local standards; this is the current approach of the MOD.

The problems of dealing with sewage sludge, which is a product of all sewage treatment systems, are complex; it consists of organic material and pollutants that will decompose and become offensive, and it also has a very high concentration of pathogens. The current military method for sewage sludge disposal in both the British Army, and also in the United States Army, is to employ a private contractor from the host nation to deal with the matter. Despite strict contractual obligations that require contractors to dispose of sewage sludge correctly on expeditionary operations, sludge is frequently discharged untreated onto land or into rivers[1]. In its current form, this approach is untenable, not only because it creates a significant human health and environmental hazard, but also because it contravenes the duty of care requirements of both the UK *Environmental Protection Act* and the MOD *Waste Management Guidelines*. In future, perhaps sludge disposal equipment should be included with all expeditionary camp systems.

People can be litigious, especially when large amounts of money in damages are potentially available. Despite the MOD simplifying its position by deciding that it will apply UK standards where reasonably practicable and additional to complying with any relevant host nation standards, it could be interesting to investigate its likely position if faced with litigation.

An example of litigation – Nuisance case in the UK. In 2002, ten thousand residents in Liverpool initiated the process to sue United Utilities for £50 million compensation due to the nuisance smell from a sewage treatment works. Wirral and Liverpool Councils took up the case and in 2003 the case was eventually lost on a "legal technicality", which was the definition of "a premises". United Utilities has since agreed to spend a further £200 thousand to reduce the smell.

Another example of litigation – Negligence case in Bangladesh. In 2002, a class action case for 77 million people in Bangladesh was brought against the British Geological Survey (BGS) for negligence in failing to provide the same duty of care it would in the UK by not identifying that groundwater in Bangladesh was contaminated with arsenic, which consequently caused serious harm. The BGS was acting as a consultant on a development programme to provide boreholes to reduce reliance on micro-biologically contaminated surface water. The case was being brought to the UK courts with British Legal Aid in the belief that UK courts would accept jurisdiction even though the BGS was operating outside of the UK because there was no reality of pursuing the claim in Bangladesh. In February 2004 after multiple hearings in the lower courts including a successful challenge to a High Court refusal of leave to appeal, the Court of Appeal ruled that the case should be "stayed" and not heard in the UK; again the case was lost on a "legal technicality".

The cynic might suggest that both the plaintiffs and defendants in these cases were "losers", certainly all of them received much unwanted publicity and tarnished reputations; perhaps the only "winners" were the legal teams?

Generally, a country has jurisdiction over the activities of the organizations functioning within it, unless an organization has a special status, such as diplomatic immunity or through a Memorandum of Understanding, as would typically occur on expeditionary military operations. Therefore an organization should comply with local legislation and standards, unless agreed otherwise. However, according to Leigh Hay & Co (a rather prolific and successful firm of personal injury solicitors with considerable experience in the area of private international actions and who have also brought many successful cases against the MOD) a party could bring a claim for damages due to negligence to any court and it would be for the court to decide if it had jurisdiction. If it could be shown that UK courts should accept jurisdiction over an organization when functioning outside the UK, then a UK court could consider the case. It would then apply an accepted UK duty of care standard when determining an award.

Claims of this type seek to hold the parent UK organization, in our case the MOD, responsible for the injuries caused, rather than any in-country subsidiary or formation. Claims may be brought in this way because the subsidiary is no longer in existence or has no assets meaning that a claimant would have no other means of redress. There must also be a genuine argument that the parent organization was in control of the overall function of the subsidiary and could reasonably be said to be responsible. The claims adopt ordinary principles of negligence, which are founded on the principle that you owe a duty of care not to harm your neighbour.

So what is negligence? The general principle of negligence was established in the case of *Donoghue v Stevenson* in 1932, in that "you must take reasonable care to avoid acts or omissions, which you can reasonably foresee would be likely to injure your neighbour". Typically an action for negligence depends on three criteria: a duty of care is owed to the plaintiff; the defendant is in breach of that duty of care; and foreseeable damage has resulted as a consequence of that breach.

These claims follow the common law rule that an organization is sued in its home base "as of right". However, in the UK there is a legal doctrine known as *"forum non conveniens"* which allows a party sued in the UK to argue that the claim should be stayed and so brought in an alternative country. This is often used tactically to either delay a claim or to prevent it occurring at all, as in the Bangladesh BGS Arsenic Case above. A decision on whether to stay a claim would be based on whether the alternative country has a fair judiciary where claimants would receive justice, whether funding is available to conduct the case locally and on the location of the witnesses. Many other European countries do not recognize this doctrine and in future with greater European integration, Leigh Day & Co believes that it may no longer be

[1] As I have observed in Bosnia-Herzegovina in 1996, 1997 and 2000, in Macedonia in 1998 and 1999, and in Iraq in 2004; and has been recorded by others in Kosovo in 1999.

possible for UK courts to stay claims.

Recent cases, such as *Cape Plc 2000* (a precedent setting negligence case by 3000 South African miners suffer asbestosis against 25 British mining companies that the UK Law Lords ruled could be heard in the UK with British Legal Aid), the Kenyan *Massai* (where the MOD settled a £4.5 million negligence claim for injuries caused by ordnance left on military ranges in Kenya which was settled out of court[2]) and the Bangladesh BGS Arsenic Case (refered to above) demonstrate that UK organizations face the prospect of being pursued in UK courts for damages for negligence if they cause death, injury or damage when operating overseas. If an individual could prove that they were injured by our actions, or the actions of those working under contract for us, through the release of inappropriately treated sewage effluent into the environment they could have a claim against the MOD. Injuries could include diseases such as an increased incidence in parasitic worm infestation, or perhaps someone might show that their environmental interests, such as a loss of livelihood through a reduction in fish stocks due to sewage pollution, had been damaged and so bring a claim. However, fortunately for us, environmental claims for negligence are more difficult to win in UK courts than personal injury claims.

In the view of Martin Day of Leigh Day & Co, a claim for negligence when conducting humanitarian relief, and consequently peace support operations, "would be unlikely but not impossible". Protection comes from adopting a pragmatic policy of applying UK standards where reasonably practicable, of complying with relevant host nation standards and most importantly of *enforcing* those standards; frequently there is considerable room for improvement in how we enforce standards in our private contractors.

If a private contractor employed by British Forces in Iraq was dumping sewage sludge that did, as it can so very easily, cause injury to health or environmental damage then the MOD could, it seems, be sued for negligence in a UK court by an Iraqi using British Legal Aid, our defence might be based on showing that we are trying to enforce standards through initiatives such as the warning notice served by 5 Field Squadron. However, other than the Kenyan *Massai* Case, I have yet to find a pollution-based claim that has been successful; all to date appear to have been stayed, which may soon no longer be possible, or have failed on legal technicalities. Perhaps what is really saving us, is that the Iraqis like the Bosnians, Kosovans and Macedonians before them, have yet to realize that they could sue us; it might be most interesting and potentially quite expensive, when realization dawns.

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[2] Leigh Day & Co represented the plaintiffs in this case.

Journal Awards

The Budget, Investments, Membership, Scholarship, Memorial and Publications Committee announces the following awards for articles of special merit published in the August 2004 issue and also awards for Op *Telic* articles published in the December 2003 issue.

THREE INTO ONE DOES GO! – AN ACCOUNT OF 42 FD SQN'S DEPLOYMENT TO THE DEMOCRATIC REPUBLIC OF CONGO JUNE – AUGUST 2003
Major S G Higgens MBE – £100

THE ZULU WAR – LIEUTENANT J R M CHARD VC RE AND WHO ELSE?
Warrant Officer Class 1 A W Kriehn – £75

OPERATION TELIC
Colonel I S James OBE – £75

THE DEVELOPMENT OF THE JOINT EOD GROUP PRE-DEPLOYMENT PREPARATIONS
Colonel J W Shanahan MBE – £75

POST CONFLICT RECONSTRUCTION – WHY IS TRANSITION TO CIVILIAN MANAGEMENT SO DISJOINTED?
REPORT ON THE JOINT PROFESSIONAL MEETING WITH THE INSTITUTION OF CIVIL ENGINEERS
Lieutenant Colonel J D Kedar – £50

A BRIDGE-PIN TWO FEW!
Major (Retd) Jeffery Lewins – £50

MOBILIZATION OF A TA OFFICER
Lieutenant N E Robbins – £50

Memoirs

MAJOR J W QUIN

Born 30 September 1939, died 9 Apri1 2004, aged 64.

JOHN Walsingham Quin joined 16 Field Squadron in 23 Engineer Regiment as a troop commander. Right from the start it was clear that he was different – he looked old enough to be the squadron commander. His background as a teacher and introduction into the Royal Engineers via the Royal Army Educational Corps distinguished him from his fellow troop commanders. It was related that the only thing he recalled of his initial training at Beaconsfield was failing to learn how to salute with an armful of books without dropping them! Quin entered into the life of a subaltern with enthusiasm, energy and whole-hearted commitment – simply his approach to life. Rugby was a huge passion of his but he was also lethal with a hockey stick in his hand. Shortly after he arrived in Osnabrück the Regiment deployed to Northern Ireland in the infantry role – John was appointed the Community Liaison Officer where he exercised his considerable talents and uncanny ability to mix with all levels of society. This ability was evident throughout his military career where he was at ease no matter the status of the company.

But there was a much deeper side to Quin in Northern Ireland. Whilst on a patrol and very sadly his staff sergeant, Mick Banks, was shot and killed during a patrol with Quin. John was devastated by the event but he concealed the true depth of his feelings from most. It was typical of his character that he felt an overwhelming sense of loss and an acute feeling of responsibility for the death of Mick Banks and it haunted him for the rest of his life; not a day went by when he did not think about the tragedy.

Back to real sappering in Germany and Quin threw himself into everything, be it training, sport or socialising, with boundless energy and enthusiasm – talk about candles being burnt at both ends and in the middle was in the philosophy! He was responsible for arranging arrival events for new subalterns and was adept at playing the role of sapper barman, sapper driver, crusty paymaster and drunken padre. His imagination knew no limit. He even sent the most disreputable sapper in the regiment to collect an officer from Hannover airport in a 200-gallon water bowser – inevitably it broke down – much to Quin's amusement. The sapper subsequently deserted to Sweden – Quin always had the knack of picking the right man for the job! He was very perceptive and persuasive – he even managed to get an officer to shave off his moustache as the commanding officer had an aversion to them – not true as he sported a fine one himself! All this is intended to portray the character and personality that was John Quin – he loved life and was always looking for action. Space prevents us from running through the whole of Quin's career but it is worth picking up on two appointments.

First was his tour as the training officer of the Bomb Disposal Regiment. In typical Quin fashion he became a fully qualified bomb disposal officer although not required to do so and joined the roster. His major achievement was to bring Central London to a standstill when defusing a bomb dredged up from the Thames – front-page headlines again. The subsequent invitation to lunch with the Lord Mayor of London, prompted by the Jimmy Young radio programme, was a significant highlight in Quin's personal record.

Second, he finished his Army career at the Regular Commissions Board at Westbury where, despite being the oldest group leader, he showed that he was young at heart, still had boundless enthusiasm, huge commitment, a fine sense of humour and a deft touch particularly in discerning an individual's motivation. It thrilled him to know that despite his own unconventional route into the Army he was at the forefront at selecting the next generation of officers. Indeed John loved dealing with the younger generation and he excelled at the Junior Leader's Regiment and the Army Apprentices' College.

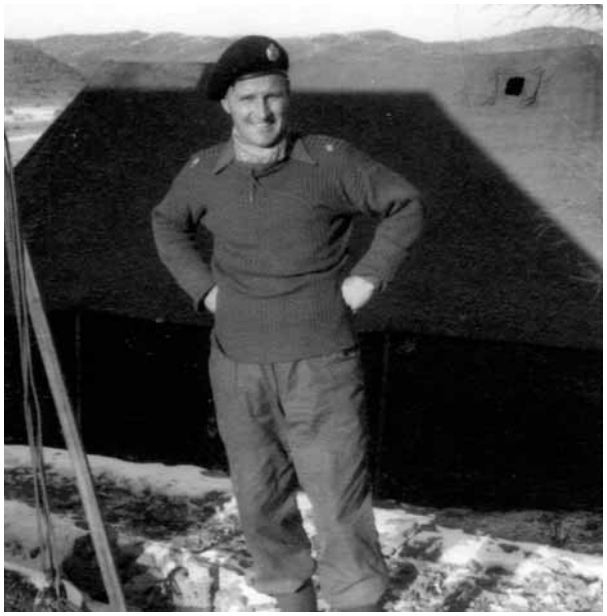
Above all Quin was a family man and enormously sociable. This is admirably encapsulated with one of his favourite welcoming events. Whilst at Hameln during a Regimental Bridge Camp a newly commissioned officer, who is now a very, very senior officer, was met at the gate by "Sapper Quin" and "Lance Corporal Walpole", a surly pair of individuals. They proceeded to strip search the car but fortunately not him and scattered his possessions all around. The officer concerned was incandescent with rage so they marched him up the hill towards the Officers Mess running the gauntlet of saluting Sappers, despite him being in civilian clothes, and the Regimental Sergeant Major, who somehow kept a straight face. On arrival at the Mess, Quin threw open the door to reveal the Commanding Officer and all the other officers waiting with pints of – well you know what. Quin had the most enormous grin on his face at yet another triumph.

He was a big man in every way and will be sadly missed by Susie, her family and his many friends.

JW JM

LIEUTENANT COLONEL M J J ROLT

Born 15 March 1915, died 27 April 2004, aged 89.



MICHAEL Rolt has a notable place in Sapper Army Air history following on from Lt Col J F Rock who pioneered, on Winston Churchill's personal orders, the setting up of British Airborne Forces in 1940. From Rock's successful innovations and trials, it was decided in 1941 to raise an Indian Army parachute formation including 411 Parachute Field Section with sixty Bombay and Bengal Sappers and Miners under Captain Rolt. Trials and training started on a grass airfield near Delhi with three Vickers *Valencia* bomber biplanes. They were modified with an oval hole in the floor of a cabin for ten parachutists. Jumping initially from under 500 feet caused fatalities and injuries, due to some parachutes not opening properly. The minimum dropping height was eventually raised to 700 feet, although this did not entirely eliminate "candles" from badly packed parachutes.

With the formation of 50 Indian Parachute Brigade, 411 Parachute Field Section was expanded to become 411 (Royal Bombay Sappers and Miners) Field Squadron in 1943. Mike, by now promoted to Major, continued in command until 1945. The unit remains as an icon in 50 Indian Parachute Brigade and has kept its number, 411, although its designation has changed from Field Squadron to Field Company. It can thus arguably claim to be the oldest "Para" named unit in continuous service in the Commonwealth. They remember their founder at anniversaries.

Mike, the son of a mechanical engineer and Brooklands car-racing enthusiast, was born in Northamptonshire. He was educated at Marlborough and the RMA Woolwich, passing out third in his commissioning batch in January1935. After eighteen months at Magdalene College, Cambridge, he graduated with a BA (Hons) in Mechanical Sciences (converted to MA in 1961). After the usual YO Courses at Chatham and Aldershot (Mounted Duties), he was posted in April 1938 to King George the Fifth's Own Bengal Sappers and Miners Training Battalion in Roorkee. After eight months, he joined the 2nd Field Company in the NWP (Wana and Nowshera) for fourteen months. He then returned to Roorkee, firstly as Assistant OIC Workshops and then, for the latter half of 1941, as SO3 RE (A) of the Depot, at a time of great expansion. While in the Frontier area and at Roorkee he chose, like many YOs, to trek and ski on his hot weather leaves in the high Himalaya. In the colder weather, he participated in jungle shooting parties. On one of the latter, following up a wounded tiger, Mike shot it after climbing up a tree. Modestly, he later said that the most dangerous moment was being handed his ancient hammer rifle, loaded and cocked, barrel-first up the tree, by his orderly!

From the raising of 411 Parachute Field Section at the end of 1941 and its expansion to a Squadron in 1943, Mike was without the advice of anyone in India having airborne experience. He had to define the likely engineer tasks and decide on all aspects of unit training. Throughout 1943, hopes of possible parachute operations in the Mediterranean and coastal Arakan rose and fell, resulting in constant changes in operational training. In 1944 hopes of parachute operations in Burma were much diminished due to the Chindit expeditions absorbing much of the available air transport. With the growing threat of a major Japanese thrust into Assam, 50 Brigade was ordered to the Imphal area to train in jungle warfare.

Although not officially classed as operational, elements of 50 Brigade fought in the defence of Ukhrul and Sangshak. Other elements, including 411, passed through Imphal, partly by forced marches, and on to reinforce the Litan Box twenty miles to the North West. Their defensive positions were attacked, with casualties, for six nights, until withdrawn on foot after demolishing equipment and supplies in the Box. The squadron was then employed unblocking, repairing and bridging on the Kohima – Imphal LofC that was not finally cleared of Japanese forces until 22nd June when 50 Brigade was withdrawn to India for operations in the Arakan. However the speed of advance was such that only a small parachute force, including a section from 411, was used to secure Rangoon Elephant Point.

Returning to UK in May 1945, having been Mentioned in Despatches, Mike was appointed OC 11 Field Company for the remainder of the year. He was then SO RE in HQ 30 Corps for a year, HQ 53 Infantry Division for another year and HQ 2 Infantry Division for a further year. Early in 1948 he was appointed to the Army Air Transport Development Centre (AATDC) in Oxfordshire. His airborne experience was well utilized for the next thirty months, in the developments for transporting light vehicles, close support artillery and logistics by *Hastings* and *Valetta* aircraft rather than by uneconomical medium and heavy gliders. He was specifically accorded the appreciation of the Assistant Chief of Air Staff (Operations) and British Joint Services Mission (Army Staff) as the Army Member, in 1949, of a three-month detachment of the RAF Transport Command Development Unit to the US Airborne Forces Development Center, Fort Bragg, and to the Canadian equivalent. Whilst at the AATDC, Mike was also concerned with the Paratechnicon, a box for a section of troops carried under a *Hastings* aircraft and dropped by parachute. The system proved not to be airworthy, but from it was developed the heavy drop platform, which is still in service for parachuting heavy loads from tailgate aircraft. His work at AATDC led to a GSO 2 appointment with the Air Ministry Directorate of Air Transport Operations for twenty-seven months until autumn 1952.

That he should volunteer to go to Korea after seven years of

mainly staff work was not surprising. He was appointed second-in-command of 28 Field Regiment. Arriving in December 1952 just after the second Hook battle, he was involved in the planning and logistics of restoring and strengthening the defence works. This included the construction of an observation and listening overlooking dead ground from which the enemy launched their attacks. The project was in the final stage of completion on the night of the last Chinese assault in May 1953. 55 Field Squadron, becoming heavily involved, fought with distinction. (The scene is depicted in Terence Cuneo's painting in the Corps HQ Mess). With the armistice two months later and the rundown of forces in Korea, Mike was appointed CRE North Malaya (with British and Malayan sappers under command), early during the bandit emergency. For his leadership and achievements during 1954-55, he earned another MID.

Returning to UK at the end of 1955, he was appointed to command 10 Trades Training Regiment at Chatham. His last army job (1959-60) was in BAOR as CRE (Works), Hannover, preparing for, and handing over to civilianized services. Retiring in 1961, these last two appointments may have helped with subsequent civilian jobs, first as Personnel and Training Manager with James Neill ('Eclipse') Steels in Sheffield, and then as Adviser in Industrial Training to the Ministry of Labour in London. The Civil Service however did not suit him and after three years he moved to British Aerospace at Brooklands (with childhood memories) as Training Adviser. His final job (1972-74) was to set up basic trades training workshops in Trinidad and Tobago, reporting to the Prime Minister.

Mike's sporting activities were very versatile. In addition to trekking, skiing and tiger shooting, he played polo in India. He was a keen sailor, an offshore racing skipper and for a time, secretary of the RE Yacht Club. Also a glider pilot flying his own glider, and a lover of fast cars. In the late1990s, he wrote a major contribution to the 1939-47 history of the Royal Bombay Sappers and Miners, copies of which are in the Corps Library. His chapter covered the Defence of Imphal, March to August 1944. He researched the unit war diaries and officers' personal accounts of eight other RBS&M companies that took part in the siege – the main turning point of the war in Burma.

Mike married Nancy Burnie in 1949. She, three children and seven grandchildren survive him.

AMF IHLG CEW PJMP JHMR DA B-W

MAJOR E LONGBOTTOM

Born 20 November 1915, died 10 July 2004, aged 88.

ERIC Longbottom graduated from Birmingham University with a First Class honours degree; his engineering experience progressing with the London, Midland & Scottish Railway, various engineering firms and Warwickshire County Council. On the outbreak of war in 1939, he joined the Royal Engineers where his potential was soon recognized. After OCTU he was posted to Kent Corps Troops, going on to become the Adjutant. In 1943 he was posted as a Major to the Experimental Bridging Establishment (EBE) at Christchurch where he worked in the design team under Donald Bailey on further uses of the Bailey Bridge. His work included development of the Bailey Mobile Bridge, which was carried on top of a Sherman tank chassis and was used operationally in the crossing of the Senio, in Italy, in April 1945.

After demobilization in 1946 he was offered a permanent post at the Military Engineering Experimental Establishment (MEXE), as the EBE had now become. This continued his involvement with military bridge design which lasted until his retirement some thirty years later. During this period he first worked on the Extra Widened Bailey Bridge, and was then responsible for the development of the Heavy Girder Bridge, needed to carry the heavier post-war tanks. Eric's next concept was the *Mexeflote,* designed for the Royal Corps of Transport; the equipment was used to form self-propelled rafts or causeways and could be transported preassembled on the side of an LSL and then free dropped where required.

On the research side of MEXE work he was involved in bridge classification methods, bridge demolition, and the very early work on the assessment of the strength of damaged bridges. He was also much involved in the tests at MEXE on deep-web plate girders, which led to changes in the British Standard for Bridge Design (BS 153).

However, by far his most important project was the development of the Medium Girder Bridge. This widely acclaimed bridge, with its many innovative features entered service in 1971. Manufactured by Fairey Engineering, it was purchased by no less than 36 countries worldwide, with sales topping the £450M mark. For his outstanding work on the bridge, Eric was awarded an Individual Merit Promotion to Assistant Director (Engineering) in 1972, a Merit Promotion in the Engineer Grade, as opposed to the Scientific Grade, being very rare in the Civil Service.

Three years later, in 1975, he retired, devoting much of his time to his local church, as a Church Warden, a member of the Church Council, and as Church Magazine Editor. His many other interests included heraldry and work on his model railway layout.

He married Mary Cook in the early days of the war, on 26 October 1940 at Stranraer in Galloway, Scotland, and they celebrated their 50th Anniversary in 1990. Unfortunately Mary died in 1991. Eric was a widower for 13 years until he died peacefully in July 2004, after a fall.

The Corps owes much to Eric Longbottom, not only a first class engineer, but also a kind and considerate man, highly respected and admired by all who knew him.

JHJ PSB JG

LIEUTENANT COLONEL P K CRUSE

Born 6 January 1925, died 19 May 2004, aged 79.

PETER Kenneth "Ken" Cruse was born at Farnham Royal near Slough in Buckinghamshire. He was educated at Eton College Chorister's School and after leaving full-time education, served a five-year apprenticeship in mechanical engineering. On completion of his apprenticeship, he was called up for National Service, rising to the rank of Lieutenant. Skills that he acquired at this early time in his life were to prove useful later in his thirty-year battle with Parkinson's Disease, when he was to utilize mechanical engineering methods as an aid in coping with small and difficult personal tasks. Thus from an early age, he was geared up for survival.

After completing National Service in 1948, Ken joined Stow and Company Limited, the Water Well contractors in whose employment he remained for forty years. He personally drilled water-wells in The Gambia, Sudan, Aden, South Yemen, Libya, Cyprus, Malta, Thailand and Rhodesia. Later, as senior engineer and contracts manager, he supervised work in Mauritius, Jordan, Abu Dhabi and Dubai. He also advised on work in Iran, Sharjah, El Salvador, Costa Rica and Gibraltar.

He continued his army career in the Territorial Army and in 1961, as a Captain, he formed the Specialist Team (Well Drilling) Royal Engineers (Volunteers), which he ran for five years. He then moved into the Engineer Specialist Pool (V) and retired from the army in 1975 as a Lieutenant Colonel.

A gifted public speaker, by 1974 Ken had become a regular lecturer for National Water Council courses as well as being involved in running annual courses at universities. In 1978, he presented a paper at the joint meeting of the Geological Society and the Institute of Water Engineers and Scientists where he was a member, later to be admitted as a Fellow. He contributed various chapters to their publications and also to the journal World Water.

At home there was always a project going on; a model railway extended down the garden and down the A4. A tunnel was built and a signal box imported from the Midlands. Ken often said of his life, "I put a lot in and I get a lot out". He looked forward to every day and almost to the end of his life he was able to claim that he "still had a lot to live for".

In his younger days, Ken had been a keen racing motorcyclist, competing in the Manx Grand Prix six times.

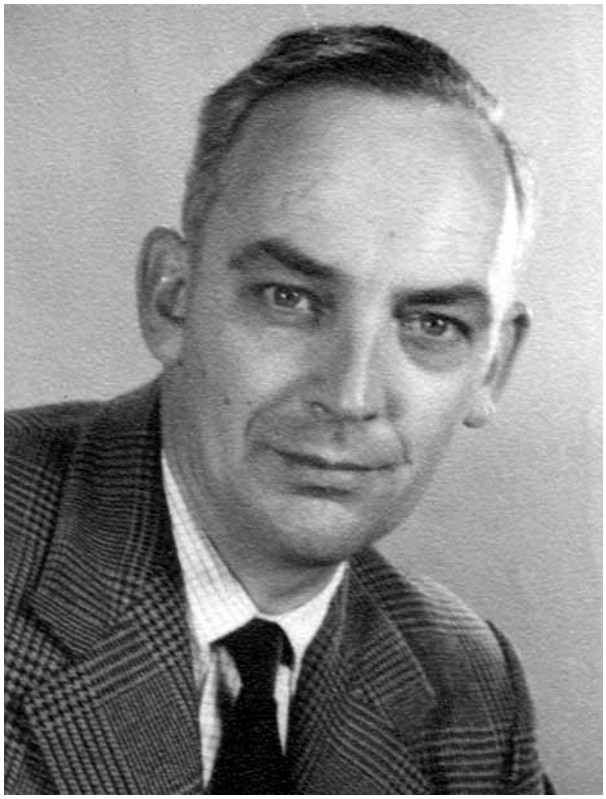
Ken's skills however, were not just practical, he was also a good pianist. It was due to a tremor noticed whilst playing the piano that he was diagnosed to be in the early stages of Parkinson's Disease. In typical Ken style, he refused to be beaten by the condition. He became involved in fund-raising, talked to individuals and groups and took part in drugs trials and innovative brain scans, the latter frequently requiring a temporary cessation of medication. Ken always held fast to his conviction that a cure for Parkinson's Disease would be found during his lifetime. With this firmly in mind, he would sometimes be found on a Saturday morning in the High Street holding out a collecting box on behalf of the Parkinson's Disease Society. Always a star, it was his positive attitude towards the "iron maiden" that is Parkinson's Disease, that Ken shone brightest. Both friends and colleagues have appreciated his inspirational qualities. He died in hospital following an infection, on 19th May 2004.

Ken is survived by his wife Audrey whom he married in 1957 and by their three children, Simon, Andrew and Jennifer. To date there are five grandchildren, Harry, Ruby, Isabel, Emma and Lydia. His sister Marjorie also survives. He is sorely missed.

AC

COLONEL D KENWRICK-COX MBE

Born 11 September 1920, died 10 June 2004, aged 83.



DONALD Kenwrick-Cox was in the last batch to enter The Shop in 1939 having taken the Army Examination in July whilst at Bedford School. He reported to Woolwich in mid-August, but was there for only a week or so before war was declared and The Shop was closed! Though the senior term was commissioned immediately, the sappers in the intermediary and junior terms were sent on leave, with instructions to report to 141 Royal Engineer OCTU in Shorncliffe in two weeks time. The two batches of regular cadets completed the six months course and were commissioned on 9th March 1940. The majority of the junior batch were still under 19 years of age and could not go on active service under the rules prevailing at the time, so were mostly posted to Royal Engineer Training Battalions as Party Officers.

Donald was slightly older than most and was sent to France at the end of April 1940. However he got no further than the Reinforcement Camp at Peronne where he was drafted into an improvised force, The Peronne Rifles. It is not clear whether or not he saw any action, but was fortunate to be evacuated through Le Havre with some of the 51st Highland Division.

Back in the UK, he joined 237 Field Company which as part of 51st Highland Division, had lost all its Section Commanders in France laying demolition lines to cover the Division's withdrawal. The Company was put into 31 Independent Brigade Group and because there were four infantry battalions, was set up with four sections. Even more unusually, the four section commanders all came from that last Woolwich "batch"! The brigade was given top priority for equipment and vehicles and was soon up to strength with FBE for a Park Troop. After short times in Oxford, Shotover Park and Hemel Hempstead, the Company moved with the Brigade to Kent to dig in along the Royal Military Canal near Hythe. Mines were laid, all the bridges prepared for demolition and the Gunners registered targets in the Romney Marshes.

By November, the risk of invasion was past and the Company returned to Hemel Hempstead and reverted to normal establishments albeit with a Park Troop. Then in the spring of 1941, the Company underwent Mountain Warfare training in the Black Mountains of Carleon in South Wales, complete with mules and chargers. Then there were firing range courses at Formby, wet bridging at Halton and Combined Operations training at Inverary. During that summer the Brigade was earmarked for a number of amphibious operations none of which came to fruition. Donald's section even set off for a raid on the Lofoten Islands only to be recalled. Dakar was mentioned, also Bear Island in the Arctic and the chance to work with Royal Marine Commandos. Thus prepared to go anywhere and do anything, 237 Field Company was a very happy unit with its four subalterns finding time to relax with many escapades in London, Newport and Glasgow, including joining Moscardi's Club in Sauchiehall Street in Glasgow where Ian Linklater was an habitué and Evelyn Waugh was another member!

Eventually it was to North Africa with 78 Division that Donald went where his section had the honour of building the first operational Bailey Bridge. Then followed the long slog up Italy and into Austria with many of his earlier colleagues still together up to VE Day in 1945. None of his subsequent posts in the UK, Belgium, Germany or Singapore probably gave him as many memorable moments as those first five years of "field" engineering.

At the end of the war, all regular RE officers were put through a Supplementary Course to cover the whole range of Sapper activities about which most of his vintage and juniors knew but a few. Donald joined No 8 Course as one of the most experienced members though not quite the most senior. Like several others, he stood as "Best Man" as a good preparation for being "Bridegroom" for his own wedding. This followed bravely during his year at the 1951 Staff College Course at Camberley. He managed to fit in his complicated, though very special marriage to Kirsten in Denmark, and still do well enough on the course to land a plum job as BM at the SME, Chatham (as did two others of his colleagues in that happy 237 Field Company). This ability to programme everything neatly into his life was an art that manifested itself again when he allocated his second daughter a precise fortnight of his time to prepare for her wedding within the entire programme he was following to refurbish his newly acquired Georgian terraced house in the City of Bath. This work of lifting and replacing the floors, rewiring much of the house and installing central heating, all to an incredibly high standard, was to occupy him and Kirsten (who became expert in stripping and repainting the large Georgian sash windows), for very many months because for Donald, only the best would do. It was to be his pride and their lasting home for many, though difficult health, years ahead. Like the message in St Paul's Cathedral for Sir Christopher Wren, in 15 Beaufort Terrace, Bath, there should be written for Donald – SI MONUMENTUM REQUIRIS CIRCUMSPICERE.

VHSH RMM PJMP

LIEUTENANT COLONEL A H BLANFORD
Born 20 January 1927, died 7 July 2004, aged 77.

ALAN Henry Blanford was born in Loughborough, the son of an officer in the Indian Army. He was educated at Sherborne, where he excelled at sports, becoming captain of cricket and rugby as well as being head of his House. After graduating from Cambridge University, he enlisted and was sent to India where he attended OCTU. He was awarded an emergency commission which was converted to a regular commission five months later. In May 1949 he became a Liveryman of the Worshipful Company of Cordwainers.

During his career of 35 years he served in 3 Training Regiment and HQRE 1 (BR) Corps before attending the Army Staff College in the late 1950s. A posting to Christmas Island followed, then Op *Crown* and a Grade 1 staff post in Bangkok. He commanded the Depot Regiment and then went to HQ Engineer Support Group at Woolwich. He maintained his interest in sport throughout his career and received his Corps colours for both hockey and tennis.

On his retirement he worked as an author with the Publications Section RSME, Chatham, where the work suited his talent and ability very much indeed. He also researched and wrote an up to date catalogue of the silver and paintings of the REHQ Mess.

As a keen sportsman still, he joined the Chatham Garrison Shoot at Chattenden and the then US (Officers) Lawn Tennis Club at Garrison Gardens. Alan served these clubs in various capacities for several decades and was an active committee member of both until his death, helping and encouraging soldiers in these sports.

He was an avid reader with an enquiring mind, a lover of classical music and fine wines – strictly in disciplined moderation, an inveterate traveller in pursuit of cultural knowledge, of the Mediterranean in particular, and in recent years an art collector. However he gave no room in his home to television or a computer. He was a volunteer helper at his local church. On Remembrance Days and the recent D-Day Commemoration he was invited to read the lesson at St Peter's Church, Bredhurst, the village where he lunched every weekday.

Alan was a very private person, exceptionally well mannered and friendly to everyone, which accounts for his large and varied circle of friends. He died while on holiday in Crete. Canon Jonathan Meyrick, acting Dean of Rochester Cathedral and a member of the tennis club, officiated at his funeral in St Peter's Church, Bredhurst. The burial was at Sedlescombe, East Sussex, where many members of his family live. An elder brother and a sister survive him.

DJ DB JNC SKK

LIEUTENANT COLONEL J A SIMSON MC
CdeG *avec* Palme
Born 2 February 1918, died 20 July 2004, aged 86.

LIEUTENANT Colonel Alex Simson, who has died aged 86, was awarded an MC in 1943 while leading mine-clearing parties in the last phase for the battle for Tunis.

In April 1943, the Allies launched a series of concentric attacks on the Axis fortifications around the city. The regiments of 2 Armoured Brigade, part of 1 British Armoured Division, were attempting to advance north of the Kournine feature, a rock peak that dominated the surrounding terrain, when they came under heavy shelling and machine-gun fire. Mines, laid on the tracks and scattered among the crops, further slowed them up.

Simson, then a lieutenant in command of a troop of the 1st Field Squadron RE, went in front of the leading tanks in a Daimler scout car. He came under closely observed artillery fire and his vehicle was repeatedly hit by shrapnel; but he continued his reconnaissance as long as the light held and then reported on the full extent of the German mine layout.

At dawn the next day, Simson took working parties forward through the mines under continuous shelling. Showing complete indifference to danger, he made lanes through the mine belts and cordoned off the areas where there were scattered mines. His example was an inspiration to his men who persevered in clearing the mines despite taking numerous casualties. Simson continued his operation in the minefield until he was severely wounded in the arm and leg later in the morning. He was awarded an immediate MC and was invested with the decoration by King George VI at Buckingham Palace the following year.

James Alexander Simson (always known as Alex) was born on February 2 1918 at Llandinam, Montgomeryshire, and went to Epsom College, where he was captain of the fencing team and played in the first XV. He completed 10 months basic training in October1940 and was commissioned into the Corps of Royal Engineers. Two years later, he was posted to the Middle East. On one occasion, in a small town in Tunisia, Simson's troop freed one of the local dignitaries who had been hiding with his family in the cellar of their house. A bottle of vintage Cognac, long buried in the garden, was produced and when the celebrations were well underway the man offered his young daughter to Simson in gratitude. Simson declined – the girl was no beauty, he said afterwards – and his diplomatic skills were tested to the full.

After the action in which he was wounded, Simson spent several months in hospital in England. He had recovered by the spring of 1944, was promoted captain and moved to the Officer Cadet Training Unit RE as an instructor in mines and demolitions. In April 1945 he took command of the RE Training Team, part of the British Military Mission to France, and was awarded the Croix de Guerre with palm.

Simson was granted a regular commission in 1948 and after attending the School of Military Survey, was promoted major. He returned to the Middle East in command of No 1 Radar Air Survey Liaison Section RE on attachment to an RAF Photographic Survey Squadron. After a spell with 42 Survey Engineer Regiment in Egypt, Simson contracted polio. He was in an iron lung for several months, but had recovered sufficiently to move to Scotland in 1954 with the military staff of the Ordnance Survey where he was responsible for the 200 staff engaged in a mapping project. He went to East Africa in 1957 with 89 Independent Field Squadron RE in command of a unit involved in mapping the northern frontier district of Kenya. A posting the next year as survey staff officer to HQ British Forces Arabian Peninsula was followed by his appointment as chief geographic officer to NATO, responsible for the military mapping of Norway, Denmark and Schleswig Holstein. In 1961 Simson moved to SHAPE, where he took charge of co-ordinating military mapping throughout all the NATO countries.

In 1968 he returned to the military staff, Ordnance Survey, to command the South Eastern Region, before moving to the Directorate of Military Survey at the Ministry of Defence. He retired from the army in 1971 in the rank of lieutenant colonel and returned to NATO as a civilian.

For the next 11 years, Simson was based at HQ Allied Forces Central Europe, Netherlands, where, as a geographic specialist, he served with military agencies and chaired working parties engaged in mapping standardisation and documentation. He and his wife Jean were great party givers and their hospitality was a byword. Simson retired in 1983 and settled in a village in Powys. He played an active part in local affairs until the onset of osteoarthritis made this impossible. For many years he enjoyed visits to the Ardennes where the family kept a cottage.

Alex Simson died on July 20. He married, in 1948, Jean Gunson who survives him together with two sons and two daughters.

Memoirs in Brief

Captain Anthony Richard Ewart Rhodes who died on 23 Aug 04 aged 87 was an eminent writer. He had a prolific output but his most well known work was a deeply researched three-volume *History of The Vatican* for which Pope John Paul awarded him a Papal Knighthood. He was educated at Rugby, The Royal Military College from where he passed out very high in the final order, and Trinity College, Cambridge. He was commissioned in 1937 and was a prominent and likeable member of 37 YO Batch. In 1939 he was posted to France with the 3rd Divisional Engineers in the BEF, where he reckoned he was involved in building more than 1000 pillboxes on the Belgian border. During the retreat to Dunkirk, he was badly wounded in the back and also lost his hearing for a while. On return to the UK, he worked on camouflage development and the coastal defences of Chatham. Later, on promotion to captain, he went on a lecture tour of the United States and Canada. At the end of the war, he was quoted as saying on being invalided from the army on medical grounds, that the only useful thing he had learned during his time in uniform was how to ride a horse! Apart from his writing, his post-war activities included being a schoolmaster, newspaper reporter and adviser to the King of Morocco.

Second Lieutenant Gilbert Hunt. Gilbert Hunt, a National Service officer, died on 21 June 04 at his home in Washington DC after a long illness. He graduated from Sheffield University in Petroleum Engineering and was conscripted in 1954. After OCTU, he was posted to Kenya during the Mau Mau troubles, a service of which he was enormously proud and never forgot. He travelled out on the troopship *Empire Halladale*. Whilst the ship was passing through the Suez Canal, a wife going out to join her husband went into labour. Gilbert was Ship's Orderly Officer and at the age of 21, had no idea what was happening! He eventually got the Military Police to take the lady in a jeep across the desert to hospital where the baby – a boy – was born safely.

Apart from building roads and bridges in Kenya, Gilbert's proudest memory was of being asked by Dacre Stroud, who was then running an Outward Bound School in Africa, to lead a party of twelve boys of mixed races up Mount Kenya. It took three days and he always said it did more to promote racial harmony than anything else he had done.

Gilbert went on to a distinguished career as a management consultant in Britain and then, for over twenty years, was a senior manager in the International Finance Corporation, the arm of the World Bank that invests in the private sector. In that capacity, Gilbert returned to Kenya, not fighting this time, but trying to invest in the country. He was at a cocktail party in Nairobi when one of the hosts, immaculately dressed and bearing two glasses of very good Scotch, came over to talk to him. The Kenyan gentleman said, "I know who you are, Mr Hunt, and I know who you were. I was a Mau Mau commander – the British Army was a thorough nuisance!" They quietly drank each other's health – with his Scotch!

His wife Anna survives him.

Derek Lord. Derek Lord died suddenly on 23 Sep 04 following emergency surgery. He was born in Kenton, Middlesex and spent the war years working for the Hulton Press and was called up for National Service in the Corps in 1945, serving in Egypt and Greece. After demobilization he returned to Hulton's and when the hugely successful cult boy's comic *Eagle* was launched in 1950, he joined the team and later became its editor. He always maintained his interest in the Corps and in April this year, was instrumental in securing the granting of The Keys of Sandwich to the Royal Engineers in recognition of their role at Richborough Port in both world wars. At the same time, the undercroft of St Peter's Church Sandwich was dedicated as a Memorial Chapel to the Royal Engineers and Derek was in charge of the arrangements for its use.

Correspondence

FOLLOW THE SAPPER

From: Lieutenant Colonel (retd) D Veitch, late RCE

Sir, – Please accept my advance order for the forthcoming Heritage Book *"Follow The Sapper"* as advertised in the August *Journal*.

My connection with the Corps? My parents were married (always a good thing) at St Mary's Church, Brompton where my father had transferred from the Canadian Engineers and then commissioned in his original Corps. Pre-WW1 he had been a member of 1st Highland Field Company in Glasgow.

I was the Canadian Engineer Liaison Officer to the EinC(A) after finishing Camberley in 1955 and had a desk in E1a. I therefore read with interest the letter from Roy Hudson who had been in E1b at the same time. I was particularly interested in his words on Boris of Katmandu since, in the course of my duties in India in 1971-78, I made 68 visits to Nepal and Boris' name and fame were everywhere, as was Boris.

I find the new format for the *Journal* most appealing and compliment and congratulate all concerned. Yours sincerely – D Veitch

MURDER INVOLVED

From: Major (retd) M A Napier

Sir, – Reference "Murder Involved" in the *Journal* for August. I was interested to see mention of Flush Force in Burma, as I was a participant in that enterprise.

In addition to units of the Bombay and Madras Sapper field companies in Flush Force, I was in charge of a detachment of about 80 men of the Bengal Sappers from 447 Army Troops Company who carried out tasks in the areas of Toungoo and Pyinmana in support of 7th and 10th Gurkha Rifles as well as some other battalions.

I can sympathise with Jake Trantram as I recall that I too suffered at the hands of the Brigade Major who felt that I was under his command and not in support as I had been instructed. I was one of the subalterns he attempted to eat for his breakfast.

My offence, apart from not being under command, was not failing to salute which I had done, but actually sitting on his desk! I was threatened with court-martial and only the arrival of my OC from Rangoon (Major Edwin Peel who will be well known to many) saved me from such a fate.

Some of the difficulty arose because I arrived by air in Toungoo in General Briggs' plane as he was giving me a lift and Scotty quite reasonably assumed that I was on the General's staff.

Consequently, he treated me generously in the mess, but when he discovered that I was merely the vanguard of another sapper contingent, his mood was not improved.

There is a happy ending to this story, for years later when I was project officer for the AVLB at MEXE, I was seated next to the guest of honour (Scotty now a Brigadier), when I reminded him of this incident and with great good humour he assured me that he would have carried out his threat but for the timely intervention of Eddy Peel.

He also told me that as a young officer he had himself been threatened with court-martial; as he has become a General I need not have worried. Yours sincerely – M A Napier.

KEEP WRITING!

From: Lieutenant (retd) G P Webb

Sir, –Writing is the basis of civilization and culture! Without it, society would not exist!

It turns events into facts, which must be addressed!

The visual is more primitive, the written demands an intellectual response!

I urge Sappers to keep writing.

Yours sincerely – Geoff Webb.

THE ROYAL ENGINEERS LIST

From: Major (retd) J E Wade

Sir, – I would not like the RE List to be split between Retired and Serving. I see the problem, but if a split is essential I would only like to have a Serving and Retired Officers' List.

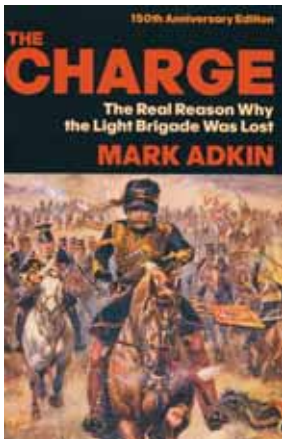
As I have two sons serving, and two retired, I like to have a current Army List. These are almost unobtainable – even Units have to spend their scarce resources on buying them. The nearest that I can get is to have RE and RA Lists (and RLC) by swapping expired copies with neighbours.

Selfishly, I now have no interest in lists of WOs and NCOs, which must be extremely useful to units etc. I wonder what others think? Yours sincerely – James Wade.

Reviews

THE CHARGE – THE REAL REASON WHY THE LIGHT BRIGADE WAS LOST

MARK ADKIN



Published by Pimlico,
Random House,
20 Vauxhall Bridge Road,
London. SW1V 2SA
Price £ 8.99
ISBN 1-8441-3734-1

IT is a well known story. On 25th October 1854, the British Light Cavalry Brigade attacked Russian gun positions at Balaclava during the siege of Sevastopol. During the seven minutes the charge lasted, of the 673 officers and men who rode into action, 247 men and 497 horses were lost. History has disagreed over who was at fault, but at the time, there seemed no doubt it was Lieutenant General The Earl of Lucan, the commander of the Cavalry Division and the officer who received the order to charge via Lord Raglan's *aide-de-camp,* Captain Nolan. Indeed Lucan was sacked although the official reason given for this was not his actions on the day, but his subsequent disagreements with Raglan who was the Commander-in-Chief. However on his return home, Lucan learned of a letter from Viscount Hardinge (the Army CinC) to the Duke of Newcastle (the Minister for War) laying criticisms of himself in that he, Lucan, having misconceived the written order and having stuck rigidly to his interpretation of it, did not consult with Major General The Lord Cardigan (the commander of The Light Brigade who actually lead the charge). Hardinge felt that Lucan had been influenced by the "authoritative tone and disrespectful manner" of Nolan and that had he spoken to Cardigan, the charge may not have happened, or at least not up wrong valley. In the light of this, Lucan wrote to the Adjutant-General requesting a court-martial in order that all the facts be made public. This request and a subsequent one were refused and he entered history as the man who lost the Light Brigade.

This book is sub-titled "The real reason why the Light Brigade was lost" so one may presuppose that the author will lay out any previous misconceptions as he sees them, analyse them, shoot them down in flames and bring in new material. In fact Mark Adkin has done this very well and at £8.99, this little book is an affordable and very good read for both students of the Crimea, and those whose total knowledge consists either of just knowing the Light Brigade did charge the Russian batteries on that day, or have seen the film and think it is a good story. There is plenty of detail and it is written in a style easy to read – indeed it starts off *"The Light Brigade was having a late breakfast in the field. … there was much puffing of pipes, almost a picnic atmosphere …"*

The book's stated objective is "to sift fact from fiction by putting the reader as nearly as possible in both the saddles of those responsible for issuing the orders that set the charge in motion, and of the participants themselves". Mr Adkin's assertion is that to make an informed judgement on the orders given that set the charge in motion, one needs to see the situation as seen by those giving the orders at the time. By this he means not just the interpretation of the tactical circumstances, but literally what they could see from their stated positions on the ground. He says he has not found any book on the subject that contains a contoured map of the ground, and that therefore, it has been impossible for anyone to say what the four main protagonists, (The Four Horsemen of Calamity as he describes them), Raglan, Nolan, Lucan and Cardigan, could actually see from where they were. As a result, apart from the interpretation of the orders, it was what they did or did not see that was a crucial factor in sending the Light Brigade down the wrong valley. The book does have lots of photographs, drawings, maps and sketches, with lines of sight and arcs of fire of the Russian guns superimposed which are very helpful, although regretfully, apart from the photographs, they are nothing like the quality we are used to in this *Journal*. Size does matter and I had to use a magnifying glass on some.

Mr Adkin makes it clear that the real reason for the loss of the Brigade lies within the actions of his 'Four Horsemen of Calamity' and even suggests that the blunder was deliberate. For this reason, chapter two is taken up completely with potted, but nonetheless detailed, biographies of the four officers in order that the reader can get into their minds. He also reminds us that since Lord Raglan had lost an arm at Waterloo, he got his aide, General Airey, to write his orders so that Lucan received it on paper (marked 'Immediate") as well as via the spoken word from Nolan.

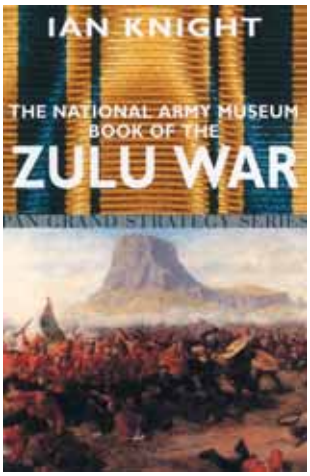
The book is not just about the tactics and politics of the situation. It contains an amazing amount of information and the imaginative reader can feel what it was like to actually ride in the charge or, at the other end of the scale, what it was like to be a Russian gunner faced by a whole Cavalry Brigade coming towards him at the gallop. For the general historian it contains vignettes of life in the field in 1854, including how Lord Cardigan lived on his yacht moored offshore and often kept his men (and his senior officers!) waiting, whilst he travelled into the field each day. Mr Adkin also deals in some detail with the diseases that claimed more lives than the enemy and how the dead were dealt with. It ends with notes on the survivors and also potted histories of the participating regiments and what their successors are now doing, right up to the fall of Baghdad in 2003.

JEB

"..... someone had blundered:
Their's not to make reply,
Their's not to reason why
Their's but to do and die: ....." (Tennyson)

THE NATIONAL ARMY MUSEUM (NAM) BOOK OF THE ZULU WAR

IAN KNIGHT



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LONDON, N1 9RR..
www.panmacmillan.com
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ISBN 0 330 48629 2

THIS is the second in a series of books designed to cover episodes in Army history featured strongly in the archive collections of the NAM. Selecting a suitable book structure then becomes a real challenge for an author. The first, on the Boer War and written by Lord Carver, took the theme rather literally, providing a characteristically austere read. This excellent and lively book approached its subject more flexibly, but was first published in 2003 at an eye-watering £30! It is now much more accessible as a paperback, but still includes the very well-chosen, atmospheric photographs of the hardback edition.

The author is best known for his many skilfully crafted full narratives of the war and special features of it. With co-writers he has also provided simpler and shorter books, including the impressively condensed and very readable guides to Zulu War historical sites in the Pen and Sword Battlefield South Africa series.

This book sensibly combines enough scene setting and explanation to satisfy the newly interested reader, whilst shading in plenty of depth and new material to stir the soul and imagination of those already fairly familiar with the main events. The NAM Reading Room archive of original photographs, maps and papers (including the Chelmsford Papers) is a treasure trove not particularly well known to the Zulu War general readership. It contains some absolute gems, and the author is just the man to mount them for display to brilliant effect in a thoroughly readable and well-paced narrative.

So, we have the unscrupulously contrived origins of the war interestingly unveiled, and a nicely wrought outline of the opening engagements by the Coastal Column on its way to the Zulu capital via the Lower Drift of the Tugela. After a "touch and go" success at the battle of Nyezane, they reach the Eshowe mission and eventually hear the news of the Isandlwana disaster. They hastily regroup to counter the expected Zulu attacks, which do not come, but then face a debilitating siege.

Switching seamlessly to the Centre Column, the author draws on some "buried nuggets" in first hand accounts to highlight interesting features of the Isandlwana and Rorke's Drift battles and their immediate aftermath. He then transfers to Colonel Evelyn Wood's Column and its area of operations. We read of the massacre of most of a company of the 80th Regiment under Major Moriarty at Ntombe Drift (which, as an aside, is the origin of that witless mess game "Are you there Moriarty?") , and Wood's stirring actions at Hlobane and Khambula. The latter was a nasty, grim battle that could have gone either way. The Zulus failed to coordinate their attacks effectively, but Wood still had to fight hard to win. It permanently impaired the Zulu warfighting effort.

Chelmsford then reconstitutes his force, relieving Eshowe, while preparing to receive reinforcements to invade Zululand again. As preparations peak, we have the sensational death of the Prince Imperial of France, whilst working directly for Colonel Richard Harrison (late RE) – which is also covered in depth by the author's subtle and penetrating book "With His Face to the Foe".

The preparations for and conclusion of the "killing stroke" battle of Ulundi, the recall of Chelmsford and arrival of Sir Garnet Wolseley bring the book towards its close. Then, finally, the capture and imprisonment of the Zulu King, Cetewayo, and reflections on the harsh impact of this tragic war on the old Zulu order – effects still felt today.

Ian Knight writes with a Vermeer-like assurance and sophistication, competently casting subtle lights on much that might otherwise remain obscure. He is no jobbing author, but a thorough and diligent historian whose depth of analysis and rigorously professional objectivity combine to deliver a very polished end product.

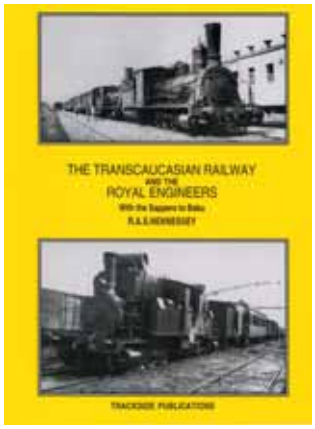
Nor is this dry stuff; he is an accomplished writer who has carefully weighed every word and nuance and the result is a stimulating, compelling and well-paced read that holds the attention. There is no end of derring-do and stark drama in this war and the author has done an excellent job in bringing it all vividly to life in this compact and tautly written book.

If you have never read about this war before, then this is a good place to start – and this author's other books then provide a very good trail to follow.

MCMcC

THE TRANSCAUCASIAN RAILWAY AND THE ROYAL ENGINEERS

R A S HENNESSEY



Published by Trackside Publications, 50 Long Meadow, Skipton, North Yorks. BD23 1BW. Price £13.95. ISBN 1-900095-22-X

WHEN he sent in his book for a possible review, Mr Hennessey said "I am not sure if it is the kind of item that the *RE Journal* covers". If you casually pick it up and flip through the pages and you do not look beyond the line drawings and photographs of locomotives, rolling stock and stations, you might think he is right. Closer inspection however reveals that here is a whole chunk of Corps history that no doubt is known to the transportation buffs, but probably to very few other members of the Corps, although to be fair, it does rate a page and a half in Volume 7 of Corps History. To quote the author; "This is a brief record of largely forgotten events from 1918-20 when British forces occupied Transcaucasia and the Royal Engineers set about putting the railways of the region on to a reasonable working basis after a long period of war and civil commotion".

The first chapters are really "scene setters" in that to understand how Sappers came to be working in the railway workshops in Georgia and Azerbaijan, or running trains in Armenia, it is necessary to know the historical and political background. Mr Hennessey deals with this very succinctly although there is, naturally, a bias towards the railway history. The maps are clear, obviously having been redrawn and retyped, and there is an amazing selection of photographs, (not all of trains!).

The involvement of the Corps started in 1917-18 when Lt Col L B Billinton RE (in civil life the Locomotive Engineer of the London, Brighton and South Coast Railway), was sent to report on the state of the Russian and Romanian railways and to offer help and advice to forces ostensibly friendly towards the allies. In the autumn of 1918, General Milne, commanding the "British Army of the Black Sea" based in Constantinople, called for Lt Col Alan Brough RE (later Maj Gen A Brough CB CMG CBE DSO and a Colonel Commandant of the Corps), at that time serving in Mesopotamia, to *"get quickly to Batu, take stock of the railway situation and sort it out"*.

When Brough arrived, he found that Baladjari Junction had been secured by the 84th Punjabis and that enough Sappers with railway experience had been found in 72 Fd Coy RE to provide a small cadre of foremen for the Baku and Tiflis Railway Workshops. From April 1919, Brough had the expert assistance of 32 Railway Operating Company and 273 Construction Company, not to mention a composite unit, The Caucasian Signal Company RE which maintained the railway telegraph system which ran parallel to the government lines, and also managed a radio net linking Poti, Batum, Tiflis and Baku. He could also call on the engineers of the 27th Division (17, 19, 72, 99, 500 and 501 Fd Coys) for general engineering and infrastructure works. The Corps involvement was not therefore just a company task, although the units mentioned were very much under strength due to the start of the post-war demobilization.

Mr Hennessey gives as one of his sources "Notes on the British Occupation of the Caucasus during 1919" published by Maj Gen Brough in the September 1938 edition of *The RE Journal* and if you like this book, the article and the small entry in CH Vol 7 will expand your knowledge. The provision of a working railway was vital to the regeneration of the region and the Corps played an extremely important part. Mr Hennessey tells the tale clearly and even non-railway minded readers should find it fascinating from an historical, political and engineering point of view.

JEB