MINISTRY OF DEFENCE

OPERATIONS IN IRAQ

Lessons for the Future

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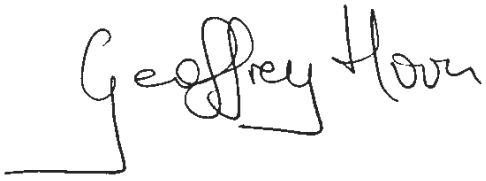
Foreword by the Secretary of State for Defence

In July this year, the Ministry of Defence published an account of the coalition military operation against the Saddam Hussein regime in Iraq together with some early indicators of lessons for the future[1]. In my foreword to that report, I promised to publish a fuller report after a thorough examination of all aspects of the operation. Since then a substantial number of UK Servicemen and women, supported by MOD civilian staff, have continued to undertake vital operations in Iraq. They are working with UK personnel from other Government Departments, contractors and non-Governmental organisations and with colleagues from 32 other nations to bring security and stability to the country, facilitate national recovery and to restore government to the Iraqi people. This has been difficult and often dangerous work in harsh conditions, and sadly, a number of our Service personnel as well as those from coalition partners and civilians have lost their lives in pursuit of these aims.

The successful generation and deployment of a large-scale UK force contribution to coalition operations in Iraq was all the more creditable when viewed against the other tasks the Armed Forces continued to meet at the same time such as providing emergency cover for the Fire Brigade strike, as well as commitments in Northern Ireland, Afghanistan, and the Balkans. This report presents the conclusions of our analysis of the Iraq operation to the end of the combat phase and the early post-conflict period and identifies the key lessons we can draw for the future. It also provides an account of the excellent further work our Armed Forces have undertaken since the end of combat operations. There are lessons at all levels, from strategic policy to unit procedures, setting out both what went well and the areas where we could do better. We have also examined how the military contribution fitted into the wider Government and coalition approach to Iraq. We will consider all these lessons carefully in our planning and procedures, so that the conduct of operations in the future can gain the maximum benefit from the experience of today. But the clear message that emerges from this operation - as from others in recent years - is that of the enduring courage, determination and professionalism of our Servicemen and women in carrying out this country's commitment to act as a force for good in an uncertain world.



[1] *Operations In Iraq - First Reflections* Published 7 July 2003

CHAPTER 1 – INTRODUCTION

1.1 Earlier this year, some 46,000 UK Servicemen and women joined a US-led coalition in military operations against Saddam Hussein's regime in Iraq. The campaign began on 20 March, and by 1 May President Bush had declared the end of major combat operations, although the regime had been removed and most of Iraq taken under coalition control after just four weeks. The background to the conflict, and the planning, deployment and combat phases of the operation, together with some early lessons identified, were described in the Ministry of Defence (MOD) report *"Operations in Iraq – First Reflections"*[2] (hereafter referred to as *First Reflections*). This report provides a deeper analysis of the lessons we have drawn from the operation, together with a more detailed insight into particular combat missions, and describes the continuing coalition operation to bring stability and regeneration to Iraq since the end of the combat phase.

The MOD Lessons Process

1.2 MOD has a well-established and comprehensive process for identifying and implementing the lessons from operations. This requires all Service units, MOD directorates and agencies directly involved in an operation, whether in theatre or elsewhere, to submit frank reports via the chain of command on their experiences. Such reports highlight areas where things worked well, but there is a deliberate focus on identifying lessons in areas where we need to continue to improve in the future. This process culminates in an overall internal report on the operation. The subsequent implementation of the lessons identified, where necessary and possible, is then closely monitored. This publication, with the earlier *First Reflections* report, represents the Department's account to Parliament and the public on the results of that process for operations in Iraq.

1.3 The identification and evaluation of lessons from operations takes time. It is important neither to make snap judgements, nor to take inappropriate action in response to lessons that may be unique to the circumstances of a particular operation. Moreover, it is essential to gather and analyse evidence to support individual lessons. Careful judgements then have to be made as to what action should be taken in response to lessons that have been identified. The defence budget is finite, and difficult decisions are constantly required as to the prioritisation of demands on resources, taking into account factors such as business and operational risk. All lessons requiring action are allocated an 'action lead' to ensure they are implemented as soon as practicable or resources permit.

1.4 In drawing lessons from coalition operations in Iraq, it is important first to set the operation in context. This was primarily a US-shaped and led operation, with the UK force contribution adopted into US plans where it could best complement and enhance US capabilities. Coalition military capabilities effectively dominated the battlespace, such that Iraqi opposition was rapidly overcome. The operation was conducted at a time of the coalition's choosing, and coalition forces enjoyed technical superiority in nearly all areas. They could, for example, operate through most conditions of visibility and weather, day and night. Moreover, the Iraqi armed forces had been seriously weakened during the first Gulf Conflict and by over a decade of sanctions and containment, and failed to mount a co-ordinated defensive campaign in response to coalition attack.

[2] Published 7 July 2003

1.5 Work now continues to identify the best and most cost-effective solution to address each of the lessons identified. As solutions are identified and validated, they will be implemented as rapidly as possible. A number of major reviews have been set in hand, and where these have already resulted in new policy they are outlined in this report. Other changes are even now benefiting the ongoing operations in Iraq, including the increase in mobilisation notice for reserves. Where solutions have significant cost implications, they will be taken forward into the Departmental planning round for consideration. The lessons process has also identified many areas of success, and here the process will be used to support and improve existing practice. As a result of these streams of work across the Department addressing all aspects of the operation, our experiences during the Iraq campaign will benefit future military operations and help to develop further the Armed Forces' expeditionary strategy.

A Fusilier gets to know the locals in Basrah

CHAPTER 2 – PLANNING AND FORCE GENERATION

Key Lessons

- The successful and rapid generation and deployment of a balanced joint force of 46,000 personnel was an exceptional achievement and confirmed MOD's ability to deliver the UK's expeditionary strategy.
- Given the unpredictable nature of emerging operations, the Department needs to review its methodology for effectively generating appropriately trained and equipped forces at the necessary readiness to meet UK defence needs, consistent with this expeditionary strategy.
- Urgent Operational Requirements (UORs) were a key part of the planning process for the operation and contributed significantly to its success.
- Not all capability gaps can be filled quickly under UOR action. We need therefore to consider key war-fighting capabilities and review the Equipment Programme to ensure that we can deliver them within planning timescales.
- Development and evaluation processes required for task-specific equipment on more complex platforms should, where identified, be undertaken in advance if possible, to facilitate the achieving of operational capability in compressed timescales.
- To be effective, the UOR process must deliver not just equipment, but operational capability. UOR procurement must therefore allow sufficient time for integration and training.

Force Generation

2.1 The successful generation and deployment of a balanced joint force of 46,000 personnel confirmed MOD's ability to deliver the UK's expeditionary strategy – indeed, the deployment was at a larger scale and completed in shorter timelines than were allowed for in the way the Armed Forces are structured and resourced. This achievement was despite the complications of the uncertain diplomatic and political process in the run-up to the start of the operation and changes to the campaign plan which meant UK forces would operate in the south, not the north. Both factors had a significant effect on the smooth provision of deployed forces, ready for operations. Forces were generated in reduced timelines, using mechanisms and pragmatic solutions that by-passed readiness and resourcing assumptions, reflecting the commitment of our Service and civilian personnel.

2.2 The preparation of force generation options for all three Services was influenced by the need to provide 19,000 personnel for an emergency firefighting capability during the Fire Brigade strike. Indeed, this was MOD's main priority until the final decision to begin the Iraq operation was taken. The Spearhead Battalion Group also had to be maintained as the UK's Strategic Reserve. Force generation was also complicated by uncertainty over the northern option (under which UK forces would enter Iraq from Turkey), which was not finally discounted until early January. The southern option required a different UK land force package, with an extra brigade. The final force composition was not therefore confirmed until mid-January and resulted in some units, such as 16 Air Assault Brigade, having only a short time in which to prepare to deploy. Consequently, the Brigade generated its forces in less than its mandated Notice To Move time-scales.

2.3 Current UK force readiness states do not include the time it takes to deploy the force or conduct in-theatre training. Moreover, each Service has a different approach to preparedness for operations. While ships and air force elements should be capable of war-fighting shortly after arrival in theatre, it may take considerably longer for forces that operate on land to conduct in-theatre training and prepare the force logistically. This is because operational location and local environment are more influential factors for such forces.

2.4 The current methodology for determining required readiness times is based on a model which assumes a linear transition from peace, through transition-to-war, to actual war-fighting. However, recent operations suggest that this model is less suited to expeditionary strategy in an era where provision has to be made for a range of unpredictable contingencies. We intend to review the generation of force elements at readiness and the implications of Notice to Move.

Implications of Operations in Iraq for Force Structure

2.5 The lessons from Iraq and other recent operations are being considered in continuing work to re-balance the Defence programme. The results of this work are expected to be announced in 2004.

Urgent Operational Requirements

2.6 Most equipment procured specifically for the operation was obtained under well-established Urgent Operational Requirement (UOR) procedures, but some capability gaps were filled by advancing delivery of existing equipment programmes. The very considerable success in delivering equipment against very demanding time and performance criteria owed much to the excellent contribution of contractors in the face of relatively late changes to the force composition and constraints on early consultation with industry. It may be necessary to review the constraints on earlier industrial engagement to minimise procurement delays in future. Delivery of equipment was also complicated by some deployment dates being advanced once the date for the likely timing of the operation became clearer, requiring some equipment to be delivered direct to theatre. While delivery was still achievable in most cases, some equipment was not able to be fitted prior to operations as a result.

2.7 The UOR process is intended to provide a cost-effective solution to specific capability shortfalls related to a particular operation. This avoids the need to stockpile equipment and stores for all conceivable contingencies. During the pre-deployment phase of this operation, over 190 UORs for equipment capability were approved, at a cost of some £510M. Some UORs were required to fill previously recognised capability gaps which, for reasons of affordability, had not been funded in the Equipment Plan. Some of these sought to increase existing weapon stocks to meet the requirement of a large-scale operation. Other capability shortfalls (e.g. those involving more complex systems such as warships and aircraft) were not filled by UORs because of the long lead times involved. We need therefore to consider key war fighting capabilities and review the Equipment Programme to ensure that we can deliver them within planning timescales. The delivery of other capabilities was enabled by the re-allocation of equipment from other platforms, due to the long lead times for critical assets. Ships and aircraft may therefore need to be 'fitted for' a new item of equipment, with trials and clearance work complete, in order to make it possible to provide the required capability within the sort of timeframe in which we prepared for this operation. The procurement of equipment at short notice for the operation highlighted our reliance on other nations for our security of supply. The risk associated with such a dependence may need to be reviewed.

2.8 The establishment of the Defence Logistics Organisation's Logistics Operations Centre was instrumental in ensuring that equipment, including UORs, was delivered to theatre in accordance with the priorities of the Permanent Joint Headquarters. Even so, tracking UORs from the

emergence of the requirement, through approval, to delivery from industry relied on a multitude of information systems, databases and reporting mechanisms. This led to some difficulties in obtaining complete and accurate information on the progress of UOR action. An effective shared data environment for UORs to provide all stakeholders with a common picture of the progress of each UOR may help to resolve this problem. Furthermore, as with all equipment and supplies, in-theatre tracking proved difficult (as discussed further in Chapter 8).

2.9 The initial assessment of our *First Reflections* report was that the new equipment nonetheless added valuable capabilities during the operation, albeit that the compressed timescales for UOR delivery meant that personnel did not always have time fully to train or become familiar with the new equipment. Subsequent analysis has shown that, in some cases - especially Communications and Information Systems equipment - users did not have complete confidence in their ability to use the equipment. Commanders were not always able fully to appreciate the additional capabilities available and how they might be used in combination to deliver an effect. UORs intended to close capability gaps with the US (such as airborne surveillance equipment) were only effective once training had been completed. In some cases, where training occurred only in theatre, this delayed the achievement of full operational capability.

2.10 However, the majority of UORs were very successful in rapidly delivering enhanced capability. The dust mitigation modifications made to the Challenger 2 main battle tank were instrumental in the tank's very high availability rate (see paragraph 5.7). The Minimi light machine gun (see paragraph 5.11) proved to be a very popular and effective weapon. At sea, new Shallow Water Influence Mine-Sweeping equipment was leased to counter the threat of Iraqi mines laid in its coastal waters and rivers (see paragraph 4.7). Protection for UK troops was improved by the lease from the US of the Blue Force Tracking system, which enhanced the situational awareness of UK land forces, and other combat identification equipment. UORs were also successfully used to increase the number of aircraft capable of delivering precision-guided bombs and provide a range of medical modules and additional stocks of precision-guided bombs and other weapons. Since the end of the combat phase, air-conditioned accommodation for over 5000 troops has been installed to improve living conditions. The Department is now considering which of the equipment bought specifically for this operation it would be beneficial to retain for future use.

HMS ARK ROYAL transits the Suez Canal

CHAPTER 3 – LESSONS FROM THE OPERATION

Key Lessons

- The operation in Iraq demonstrated the extent to which the UK Armed Forces have evolved successfully to deliver the expeditionary capabilities envisaged in the 1998 Strategic Defence Review (SDR) and the 2002 SDR New Chapter.
- The operation confirmed that, despite the need for continuing refinement, UK war-fighting doctrine, broadly based on the tenets of mission command, manoeuvre warfare and decisive effect, is sound.
- The operation confirmed the requirement for highly versatile UK forces that are able rapidly to mount small- and medium-sized operations on a routine basis, while also being capable of meeting less frequent but larger and more demanding commitments.
- Overall, the UK Command and Control (C2) arrangements established for this operation worked well. The Department will however keep C2 doctrine for deployed operations under review in the light of experiences in Iraq.
- Expeditionary operations require a joint Communications and Information Systems (CIS) infrastructure to provide secure, reliable and timely information access to all stakeholders through a common network. This should include a means of interoperability with potential coalition systems, particularly those of the US.
- The level of contractor support required to deliver operational CIS capability for deployed operations needs careful consideration. Sufficient skilled Service personnel must be retained to prevent an over-reliance on contractors. The Department is reviewing this issue.
- At the tactical level, UK Bowman Personal Role Radio equipment was a considerable success, underlining the benefit of effective real-time communications to the lowest combat level.
- Intelligence structures, including specialist and deployed manning levels and supporting CIS, should be reviewed to ensure they can meet the challenges of modern operations and the need to co-operate with potential allies and partners.
- Individual and collective training that reflects the complexity of current intelligence processes and systems is required for specialists, staff and commanders.
- There was a shortage of linguists. This is being addressed in a Departmental study of the recruitment training and retention of linguists.

3.1 The Strategic Defence Review (SDR) envisaged that UK Armed Forces should develop an expeditionary-based capability, providing ready, balanced forces capable of applying decisive effect in scenarios of varying intensity, frequency and character in an uncertain and unpredictable world. The SDR New Chapter analysed the implications of 11 September 2001, subsequent operations against terrorism, the danger from rogue states and the growth of asymmetric threats. It concluded that the UK needed to be able to work with allies, partners and, if necessary, alone in dealing with global challenges to national security and interests. The operation in Iraq demonstrated how far the UK Armed Forces have successfully evolved to deliver that vision.

3.2 The coalition campaign in Iraq combined the massive application of air power against regime targets and Iraqi forces with a rapid invasion from the south, designed to use speed and shock to reach Baghdad and quickly defeat the regime. At the strategic level, the operation attempted to separate the regime from the Iraqi population through a combination of psychological signals and selective targeting. Coalition land forces were to defeat or compel the surrender of the Republican Guard and Iraqi Regular Army, and conduct security and stabilisation operations. This was complemented by the extensive use of special and light forces operating throughout Iraq to neutralise critical targets and seize important economic, infrastructure and military assets. Land manoeuvre was facilitated throughout by an air campaign which achieved significant attrition of the enemy's combat power and involved unprecedented accuracy and lethality, based on the widespread, although not exclusive, use of precision munitions, and linked sensors and data streams.

3.3 The operation confirmed that, despite the continuing need for refinement, UK war-fighting doctrine, broadly based on the tenets of mission command, manoeuvre warfare and decisive effect, was sound. It also tested UK forces' ability to operate effectively alongside US forces (see Chapter 7). The success of rapid, decisive operations in Iraq reflected the impact of a combination of specialised light forces, highly mobile armoured assets and co-ordinated air support. The assault on the Al Faw peninsula (see Box page11) was a good example of the progress UK forces have made in the delivery of 'joint effect' – bringing together the capabilities of all three Services to achieve a single aim. However, in certain areas, such as land/air integration, operational and tactical doctrine does not yet fully reflect the demands of high-tempo, time-sensitive or network-enabled operations. Throughout the campaign, UK personnel, who deployed in expectation of operating in a hostile and demanding environment, and aware of mixed support at home for operations, were more than equal to the task.

3.4 As the 2003 Defence White Paper[3] concludes, the level of concurrent and sequential crises, and the sheer range of military tasks that the UK is likely to have to meet, place extensive and varied demands on our Armed Forces. In Iraq, our forces simultaneously conducted high intensity combat, stabilisation, and humanitarian assistance operations. Such complexity demands highly adaptive forces that must be able routinely and rapidly to meet the most likely (and frequently occurring) small- and medium-sized operations, while also being able to generate appropriate forces for the less frequent, but larger and more demanding commitments.

Command and Control

3.5 The three UK Contingent Commanders (Maritime, Land and Air) operated under the tactical control of their respective US Component Commanders, reflecting many years of NATO interaction and recent bilateral experience in the Gulf region. This arrangement worked well for the Air and Maritime contingents, with effective working relationships established at all levels. The Land contingent arrangements were different, as the US 1st Marine Expeditionary Force (1 MEF) HQ sat in the coalition chain of command between the UK Land Contingent HQ and the US Land Component HQ. Nevertheless, 1(UK) Armoured Div worked exceptionally well under the command of 1 MEF owing to the strong leadership and multinational awareness of the 1 MEF Commander and the strong professional links already established between the UK and US military.

3.6 In terms of national command and control, the Chief of Joint Operations (CJO), Lieutenant General Sir John Reith, was appointed Joint Commander and was responsible to the Chief of the Defence Staff for the conduct of operations, exercising operational command over all UK forces assigned to the operation. CJO exercised his responsibilities through the Permanent Joint Headquarters to the National Contingent Commander (Air Chief Marshal Sir Brian Burridge) and the UK Contingent Commanders in theatre. While this did not mirror US command structures and led to a degree of complexity at the tactical and operational levels, it served to reserve national direction of UK forces and ensure that they would only undertake specific missions approved by UK commanders. The doctrine underpinning these arrangements is nonetheless being reviewed.

[3] Command Paper No. 6041, '*Delivering Security in a Changing World*' dated 11 December 2003

Communications and Information Systems (CIS)

3.7 The UK's Communications and Information Systems (CIS) infrastructure could not easily support the information exchange requirements of the Iraq operation. UK forces had to rely on a variety of different communications systems connected by numerous gateways and interfaces. Integration of these capabilities was reliant on the procurement of additional equipment under UOR action and the initiative and skill of deployed personnel. Some gateways could not manage the volume of information traffic generated, inhibiting communication and information exchange between the UK Maritime, Land and Air contingents. The limited degree of interoperability between UK and US CIS also had an impact on the ability to support coalition planning and operations in a high tempo environment, though maritime UK/US interoperability was good. At the tactical level, however, UK Bowman Personal Role Radio equipment was a considerable success, enabling effective command and control at section and platoon level. Indeed, the US Marines purchased some 5000 sets. Clansman, the UK's current main tactical communications system which is due to be replaced by Bowman from 2004, also proved reliable on this operation, despite past difficulties.

3.8 Inadequate support for deployed CIS equipment placed a considerable burden on the units operating it, and substantial reliance was placed on contractor support in the UK. The operation also highlighted shortfalls in CIS training in a number of areas, such as web-based technology.

Intelligence

3.9 Intelligence played an invaluable part in every aspect and at every level of this campaign. This activity ranged from analysis of the intentions of the Iraqi regime to the specific targeting of individual military units, and the integration and analysis of information from a wide diversity of technical and other sources. The tempo and effects produced by land, sea and air operations were directly attributable to the quality, availability and timeliness of the intelligence provided, which was significantly and critically enhanced by access to US and other coalition sources. However, Iraq had been subject to 10 years of significant intelligence effort since the end of the 1991 Gulf Conflict. The intelligence preparation challenge was therefore less than would be required for a new theatre. Key vulnerabilities and vital points were well known, allowing precision effects to be applied early on in the campaign.

3.10 *First Reflections*[4] emphasised the challenge to intelligence organisations posed by the significant increase in the demand for intelligence and the need to service the requirements of rapid, decisive and multi-layered campaigns. We concluded that: there was a need to review our structures and specialist and deployed manning to ensure their suitability and resilience to meet this challenge; greater connectivity between national and allied elements and access to robust communications was required; the era of Network Enabled Capabilities demanded an increased tempo of intelligence; human intelligence, linguistic, imagery and technical skills were of particular importance; commanders and staff at every level needed to be capable of accessing and contributing fully to the intelligence process; and mechanisms were required to ensure that the full range of battlefield effects could be analysed as soon as they occurred.

The helicopter carrier HMS OCEAN in the Gulf

[4] *First Reflections*: Box page 15

THE AL FAW PENINSULA OPERATION

The 3 Commando Brigade Royal Marines (3 Cdo Bde) mission to seize intact the oil infrastructure on Iraq's Al Faw peninsula was crucial to the coalition's overall campaign plan. Failure could have enabled Iraqi sabotage, leading rapidly to a major environmental disaster in the northern Gulf. Moreover, the oilfields were crucial to the subsequent reconstruction of the Iraqi economy. Near the base of the Al Faw peninsula the oil passes through a distribution station and four large pipelines that emerge briefly on the beach before running along the seabed to feed gas/oil platforms 25 miles offshore, where deep sea oil tankers take it on board (see Figure 1). This infrastructure was a strategic target for the coalition.

A key part of the campaign plan was to secure the Al Faw peninsula to provide land flank protection to the Mine Counter Measures Task group as it conducted mine clearance operations in the Khawr Abd Allah waterway in order to open the sea route to Umm Qasr (see box page 19), which 3 Cdo Bde also needed to seize simultaneously. As Iraq's only deep water port, Umm Qasr would be the essential hub for delivery of humanitarian aid.

Pressure on airport and seaport facilities in Kuwait due to the massive US troop build-up made an amphibious assault on the Al Faw particularly attractive, since it is Iraq's only coastline, and the forces involved could be held, launched and supported from the sea, thereby exploiting Iraq's maritime flank. 40 Commando Group sailed to theatre as part of the Royal Navy's Amphibious Task Group with helicopters embarked and the logistics necessary to support the Brigade ashore. The remainder of 3 Cdo Bde moved by air direct to Kuwait, and established in concentration areas in the desert to train, plan and rehearse. 3 Cdo Bde HQ, 40 and 42 Cdos, along with 29 Cdo Regiment RA, 59 and 131 Cdo Engineer Squadrons and other Brigade troops were all committed to the operation.

This was a joint operation, spanning the areas of responsibility of the sea, land and air component commanders. It was also a 'combined' operation with the United States, under overall US command. To provide the necessary force simultaneously to capture Umm Qasr, the US Marine Corps (USMC) placed its 15th Marine Expeditionary Unit (MEU) under command of 3 Cdo Bde, demonstrating the mutual respect developed between the RM and USMC over many years.

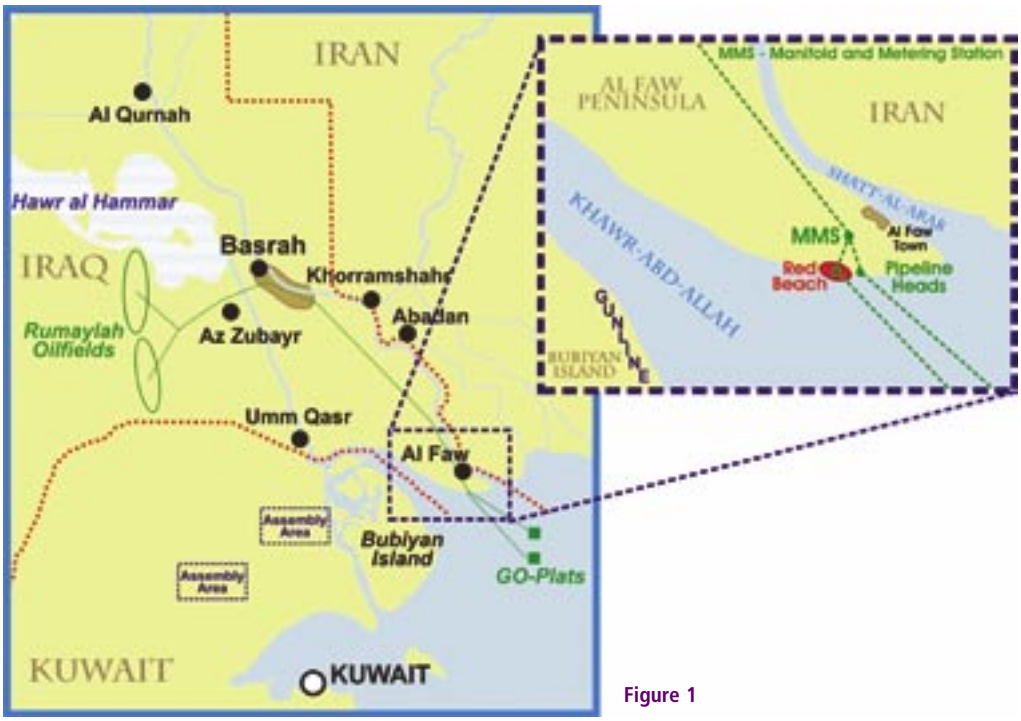


Figure 1

The Al Faw operation was a classic amphibious night helicopter commando assault and, as the first conventional ground force action of the war, had immense strategic significance. On the night of 20 March 2003 the men of 3 Cdo Bde waited in Kuwait and on ships in the Gulf, ready to embark in over 80 helicopters to launch the assault. After days of bad weather, with low cloud and blown sand, the weather and light conditions were touch and go, but the strategic imperative to seize the oil infrastructure intact meant there was no scope for delaying the launch options. The start of operations was set for 2200 local time and was preceded by a short but intense air bombardment onto known enemy positions, combining the effect of JDAMs[5] dropped from US FA-18s with the firepower of AC-130 Spectre gunships. 40 Cdo and US forces landed as planned on their three strategic objectives, capturing some 230 prisoners for no loss. Meanwhile, simultaneous landings from air and sea were made onto the gas/oil platforms out to sea.

With the best part of an Iraqi Army armoured division known to be based in and around Basrah, it was vital to ensure that no counter-attack could be mounted to threaten 40 Cdo's tenuous foothold on the peninsula. A second aviation assault by 42 Cdo in USMC helicopters was planned to launch an hour after 40 Cdo. Preceded by Cobra helicopter gunships to sweep their landing sites, 42 Cdo was to land just north of the town of Al Faw, destroying the enemy artillery which threatened the oil infrastructure, thereby securing 40 Cdo's flank. For an hour and a half, the landing sites were subjected to an intense bombardment by artillery and naval gunfire from four artillery batteries (three UK and one US) positioned on the eastern edge of Bubiyan Island (see Figure 1), and from three UK ships (HMS RICHMOND, HMS MARLBOROUGH and HMS CHATHAM) and an Australian ship (HMAS ANZAC)). 42 Cdo's insertion started badly in appalling visibility, made worse by blowing sand and smoke from fires started the previous day. Tragically, the US CH-46 Sea Knight helicopter carrying the headquarters of the Brigade Reconnaissance Force crashed as the assault formation turned out over the Brigade assembly area to start their run in over the sea. With the cloud base dropping still further, the insertion was aborted, forcing the Brigade HQ rapidly to identify other aviation assets and plan a new insertion for 42 Cdo at dawn, using RAF Chinook and Puma helicopters. Although the landing took place six hours late, onto insecure landing sites, and in some cases miles away from those originally intended, all objectives were secured, demonstrating 3 Cdo Bde's inherent flexibility.

Meanwhile, early that morning, 15 MEU crossed the border into Iraq, bypassing the town of Umm Qasr as planned, to seize the port area, before pushing north up the western side of the Khawr Abd Allah waterway. They encountered some stiff resistance as they advanced, particularly from the irregular Saddam Fedayeen, but nevertheless made excellent progress and achieved all their critical objectives ahead of time.

The initial plan had always depended heavily on helicopters both to insert the force and then sustain it. In an effort to reduce dependence on aviation, engineers operating from the shore and mine clearance divers, inserted by hovercraft from the sea, worked against the clock to try to clear a beach on Al Faw (Red Beach) large enough to land the light armour. This option had to be abandoned at first light when the scale of mining became apparent, and the risk to the heavy US Navy hovercraft carrying UK Scimitars was deemed too high. C Squadron Queen's Dragoon Guards, who had been pre-loaded onto hovercraft on board USS RUSHMORE for the landing, had to be landed back in Kuwait. They finally crossed the waterway north of Umm Qasr some 24 hours later to take up their screen positions on the exposed salt marshes south of Basrah.

Overall, the Brigade's operation was completely successful. The level of resistance put up by the enemy proved to be less than expected. Nevertheless, as final preparations were made

[5] US Joint Direct Attack Munitions – GPS guided bombs.

on 20 March in the tactical assembly area to launch the assault, there had been attacks by Iraqi missiles. The Brigade fully expected to be subjected to chemical attack and the helicopters to be engaged by air defence artillery. It was also anticipated that there would be determined resistance on the ground, which the Brigade did encounter at local level from some determined and fanatical fighters. However, although the Iraqi armed forces mounted several armoured attacks out of south-east Basrah, their defeat stemmed from their inability to put together a co-ordinated defence. This failure can be attributed to the surprise engendered by the speed and force of the coalition's initial assault. The all-arms co-operation between the Commando Groups and the MEU, the ships and helicopters from the Amphibious Task Group, the tanks and other elements of 1 (UK) Armoured Division, and the AC-130 Spectre gunships and coalition Close Air Support sorties that all supported the amphibious operation provided useful lessons for the all-arms approach to littoral operations.

Following this initial operation onto the Al Faw and into Umm Qasr, 3 Cdo Bde advanced and was involved in a series of engagements, including an assault by 40 Cdo on the Abu Al Khasib suburb in south-east Basrah, which helped precipitate the fall of the city (see Box page 25).

TRENDS FROM RECENT OPERATIONS: SOME SIGNPOSTS TO THE FUTURE

The nature of warfare and the way in which UK forces operate have changed and will continue to do so. Nevertheless, whilst recent operational experience has consistently validated much of our existing doctrine, the rapidly changing strategic environment has made it necessary for the UK to develop flexible capabilities for expeditionary operations. MOD has accordingly developed a high-level, joint concept of operations for the future that strikes an important balance between continuity and change.

Recent operations have confirmed the trend for conflict to occur between forces of very different sizes, strengths and tactics ('asymmetry'). Overwhelming Western coalition combat power increasingly leads to enemy actions that exploit the inherent vulnerability in our respect for moral and legal conventions. This presents a difficult challenge, but a powerful counterweight is our ability to respond quickly to the unexpected. This is one reason why the concept of 'agility' is the cornerstone of MOD's new doctrine. 'Agility' has both mental and physical dimensions but it is essentially epitomised by the ability of our people to think creatively, to be resourceful and imaginative and to adapt to the unexpected. At its heart are four key attributes for which we will train, organise and equip UK Armed Forces: responsiveness, robustness, flexibility and adaptability.

The 'agility' of UK Service personnel is arguably their greatest strength, but it invariably brings a high individual training requirement and attendant resource implications. The 'moral' component of fighting power is also derived in part from the ethos and cohesion of individual units, putting a premium on unit and Service identity. In Iraq, operational flexibility and tempo also depended on how well information was shared across traditional boundaries and to what extent force elements had trained together for joint operations. To achieve high 'agility', the Services will increasingly depend upon each other in war; it is therefore important to forge even stronger bonds of inter-Service co-operation in peacetime. In future, joint and combined training must include more frequent interaction at the critical tactical level.

The Iraq conflict confirmed the trend toward increased discrimination and precision in the use of weapons, enabling much greater accuracy in targeting. Paradoxically, it is much easier to generate the wrong effects on the now rare occasions that weapons miss. But it is also important to consider precise effect, not just weapon precision *per se*. Many targets

in Iraq were relatively easy to acquire and attack, but what really mattered was generating and measuring the desired effect of attacks. In future, there will be a strong emphasis on effects-based operations, a critical part of which is the analysis of campaign effectiveness - a more sophisticated approach than traditional battle damage assessment. This will also place greater emphasis on information and media operations, which are critical to success, and the new concept of operations accordingly aims to provide a better understanding of the information campaign.

Successful military capabilities in recent operations can broadly be characterised as those which achieve precise and selective effect by responding to information and exploiting 'designators' which point out the target. Such information will be gathered by a variety of means, and the 'designators' may sometimes be independent of the launch platform. The long endurance of many military capabilities and improved situational awareness are now providing the key to more responsive targeting. The high number of time-sensitive targeting missions in Iraq was a specific and very successful example of responsiveness that led to an impressive increase in the flexibility and precision of joint effect in the close battle. Such responsiveness is no longer the domain of Special Forces and other specialist capabilities; in future it will become a routine capability in order more easily to achieve precise effect in minimum planning time.

Tactical decision-making is often fast enough to outstrip the ability for re-evaluation at the strategic level, leaving the two levels of command out of step. On the other hand, strategic decisions may sometimes need to be taken rapidly in response to tactical events. This problem will be addressed in the future through an adaptive command and control system, which also recognises the primacy of the 'mission command' philosophy. This will allow us to exploit better the relationships between command and control that are relevant to good decision making in an information-rich environment. It will also allow us to adapt more intelligently to the *ad hoc* command and control arrangements that necessarily characterise coalitions of the willing.

Force protection in Iraq covered a wide range of factors that included combat identification. Whilst coalition acquisition of a Blue Force Tracking system helped improve shared awareness to a degree, vulnerability to friendly fire remains a risk. The UK's new concept of operations will attempt to manage that risk by stressing the importance of sharing critical information on force position, status and intent, although physical protection will remain an important factor.

In sum, our thinking about future operational techniques is being fully informed by recent events, many of which reinforce the enduring principles of British defence doctrine.

A Corporal hands over new shoes to an Iraqi child

CHAPTER 4 – THE MARITIME ENVIRONMENT

Key Lessons

- The performance of Royal Navy (RN) forces in successfully accomplishing their objectives confirmed the development of the RN's joint and expeditionary capabilities since the SDR.
- The operation underlined the strategic value of the sea for the application of combat power, early theatre entry and power projection. This took the form of amphibious forces, sea-based helicopters, cruise missiles, and the use of naval fire support and logistics during the Al Faw operation.
- Developing UK carrier and amphibious doctrine needs to take account of US experience during the operation.
- The operation showed the potential value of sea-based sustainment of land forces.
- The RN's Mine Counter Measures effort helped maintain sea lines of communication and succeeded in opening the port of Umm Qasr for the delivery of essential humanitarian aid.
- The operation validated the importance currently being placed on developing the UK's future afloat support capability as part of the Military Afloat Reach and Sustainability (MARS) and Joint Casualty Treatment Ship projects.

Introduction

4.1 The Royal Navy's main role in the Iraq operation was to deliver amphibious forces into theatre to conduct the assault on the Al Faw Peninsula as described in *First Reflections*[6]. Other roles were to ensure the safe transit of personnel and equipment to theatre by sea, to ensure access for joint forces, and to help sustain maritime and joint forces. The RN Task Group's performance showed the Service's inherent expeditionary capability in the context of modern coalition operations. The operation confirmed the strategic value of the sea for the application of combat power, theatre entry and power projection in the form of sea-based helicopters, submarine-launched cruise missiles, amphibious forces and naval fire support.

The Amphibious Task Group arrives in the Gulf

4.2 The main threat to coalition naval forces came from mines, anti-ship missiles and asymmetric attack from fast, inshore attack craft. Coalition maritime patrol aircraft underlined the value of their littoral anti-surface warfare capability by maintaining regular patrols against the latter threat. RN Lynx helicopters fitted with a night vision capability, provided under UOR procedures, also provided a vital capability against this threat. As the Iraqi navy was largely ineffective or non-operational during this operation,

[6] *First Reflections*: Page 17, paras 3.13-3.14

the capability of the RN ships was not fully tested. Nonetheless, as outlined in Chapter 3, the RN played a key role in the initial assault and led the coalition's mine countermeasures campaign in which our personnel and equipment proved to be second to none. Precursor hydrographic surveys leading to new chart production by the UK Hydrographic Office helped assure navigational safety and a considerable expansion of operating areas for coalition naval forces. The support role offered by our fleet in the Gulf was also highly successful, providing logistic supply to UK forces deployed ashore as well as significant tanker support to the US Navy. This underlined the importance of sea-based logistics, independent of host nation support, as a force enabler in expeditionary strategy. In particular, it validated the importance currently being placed on developing the UK's future afloat support capability as part of the Military Afloat Reach and Sustainability (MARS) and Joint Casualty Treatment Ship projects.

4.3 HMS ARK ROYAL and HMS OCEAN and their respective air groups were both used to support helicopter operations, including the initial assault as well as surveillance operations in support of the land forces. Three frigates and three destroyers, with their own embarked Lynx helicopters, and other aviation assets embarked in RFAs and HMS ARK ROYAL provided critical force protection to all maritime forces. In addition to their protection duties, some of these ships supported land operations during the initial assault by providing naval fire support for the first time since the Falklands Conflict, firing 156 rounds against areas of the Al Faw peninsula that were out of range to the Army's artillery.

4.4 During the deployment phase, we were conscious of the potential asymmetric threat. The RN accordingly committed significant resources to protect from potential terrorist attack 60 UK chartered merchant ships bringing in over 90% of all UK military equipment that could not self-deploy, as well as 16 high-value RN and RFA vessels, over a 5000 mile route. Over 50% of the deployable fleet was engaged in escorting duties along this route.

Support to Amphibious Landings

4.5 The high mine and anti-ship missile threats around the Iraqi coast meant that the initial assault onto the Al Faw peninsula was reliant on helicopter support. The plan was to insert 40 Commando (Cdo) first using RN and RAF helicopters to seize the oil infrastructure at the base of the Al Faw peninsula. In order to protect 40 Cdo's northern flank, 42 Cdo was to be inserted a short time later using US Marine Corps helicopters. Build-up of combat power, in particular light armour and logistics, was to be achieved by US heavy lift hovercraft because the very shallow beach gradients did not allow the use of conventional landing craft. The assault by 40 Cdo in conjunction with US forces, went according to plan, but the early crash of the US CH-46 Sea Knight helicopter carrying the headquarters of the Brigade Reconnaissance Force caused the second helicopter insertion to be aborted in the appalling and deteriorating visibility. It was hastily re-planned and executed six hours later using RAF Chinook and Puma helicopters. In view of extensive mining of the beach area it was decided not to risk the hovercraft. Consequently the light armour supporting 3 Cdo Brigade had to be inserted by a landing craft ferry north of Umm Qasr, some 24 hours later than planned.

4.6 A new UK Landing Platform Dock, HMS ALBION, has recently entered service, with a second, HMS BULWARK, currently under procurement along with four BAY class auxiliary vessels. With these will come new classes of landing craft, offering significant additional capability. This operation also demonstrated the utility of hovercraft in amphibious landings.

Mine Counter Measure Equipment

4.7 The UK Mine Counter Measure (MCM) capability was enhanced specifically for this operation by two systems delivered through the Urgent Operational Requirement (UOR) process: the Shallow Water Influence Mine-Sweeping System (SWIMS) and the One-Shot Mine Disposal System (OSMDS). SWIMS was developed specifically for this operation and was the coalition's only remote-controlled minesweeping equipment designed to operate in the small rivers and waterways

in the south of Iraq. This system successfully filled a gap in our shallow water capability, and after being procured against a tight timescale offered good reliability in theatre. OSMDS is planned to enter service in 2006 as part of an existing programme to replace the ageing in-service system. Given the anticipated use of sea mines by the Iraqis, an OSMDS capability was introduced as a UOR. This capability offered UK forces a simplified and quicker system requiring fewer operators, and gave reduced target prosecution time when compared against the in-service capability. Both new systems performed well and were vital to clearing the waterway leading to the port of Umm Qasr as discussed in the box on MCM operations (page 19). It is estimated that the OSMDS reduced the time to neutralise a mine by a factor of four. MOD is also looking at ways of improving the capability for 'Very Shallow' and 'Surf Zone' mine countermeasure activities, which would expand the range of waterway that could be cleared from threats.

Hydrographic Support

4.8 Prior to the operation, the UK Hydrographic Office produced 14 new fleet charts and 10 new editions of standard navigational charts showing all hydrographic information as well as specific on-shore detail. HMS ROEBUCK, a Coastal Survey Vessel, was extended in service to undertake essential work in the northern Gulf and waterways to Umm Qasr. Her surveys resulted in the timely collection of hydrographic data that was incorporated into the updated charts. These assured the navigational safety of coalition shipping and greatly increased their freedom of movement by expanding operational areas, facilitating the assault onto the Al Faw Peninsula. HMS ROEBUCK's capability was also used in opening the waterways to Umm Qasr to enable the subsequent delivery of humanitarian aid.

The survey ship HMS ROEBUCK helped open the channel to Umm Qasr for humanitarian aid shipments

Royal Fleet Auxiliary

4.9 The Royal Fleet Auxiliary ships in the Gulf (two thirds of the total RFA Fleet) delivered effective, flexible logistics support throughout the operation. For example, the LEAF class of RFAs provided considerable quantities of fuel for the US Navy and other coalition shipping in the Gulf, bolstering an area of potential weakness. The smaller auxiliary ships were also used to deliver supplies ashore, as well as within the Navy fleet, and to carry out other essential tasks such as supplying fresh water and waste disposal. However, some design and manning shortcomings were highlighted, in particular limitations in their ability simultaneously to re-supply several ships over sustained periods. Furthermore, their limited self-defence capability increased the levels

of risk when providing logistics support to front-line units, including those units carrying out mine clearance tasks. In addition, the absence of secure satellite communications in RFA vessels prevented secure data transfer and participation in a network-enabled capability with the rest of the fleet. The MARS project will replace a substantial portion of the RFA fleet with new vessels between 2010 and 2020, and is being designed to provide the required future afloat support capability. The project is at an early stage and will reflect lessons from this operation.

RFA SIR BEDIVERE and RFA VICTORIA transfer ammunition

4.10 The deployment of RFA ARGUS, the UK Primary Casualty Receiving Ship, was a key part of the coalition plan. Although, in the event, it had to receive thankfully few coalition casualties, it played a key role by offering a casualty treatment capability for those injured in early operations, including Iraqi civilians. MOD currently plans to replace RFA ARGUS around the end of the decade with an improved capability, the Joint Casualty Treatment Ship.

4.11 The Forward Repair Ship RFA DILIGENCE, configured for battle damage repair and augmented by Warship Support Agency personnel, provided a significant in-theatre engineering support facility, enabling a number of warships to undertake maintenance whilst at sea.

4.12 The UK's small but significant cruise missile contribution was provided by two RN submarines that were present in theatre (see paragraph 6.7).

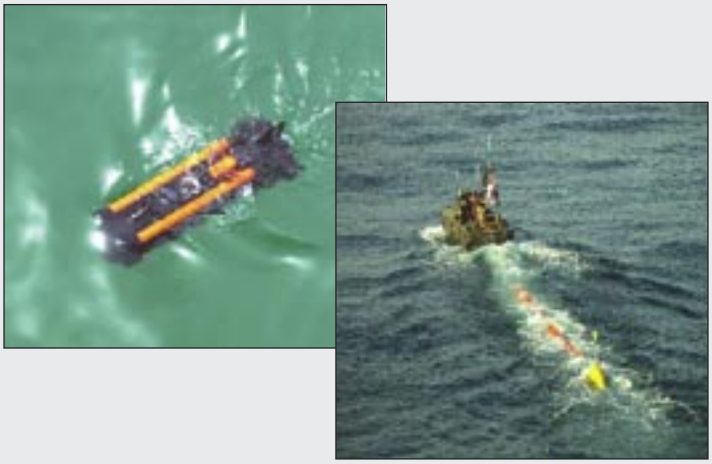
RFA FORT AUSTIN alongside the repair ship RFA DILIGENCE

MINE COUNTER MEASURES (MCM) OPERATIONS

The MCM mission during operations in Iraq was to help maintain sea lines of communication and to clear the approach to Umm Qasr to enable humanitarian aid to enter Iraq. Key to achieving the humanitarian mission was the opening of the Khawr Abd Allah waterway, which separates Iraq from Kuwait, and is the route from the sea to Umm Qasr. Conditions for MCM in the waterway were expected to be poor with brackish water, very poor underwater visibility and tidal streams of up to four knots, all in a narrow, unmarked and poorly charted channel.

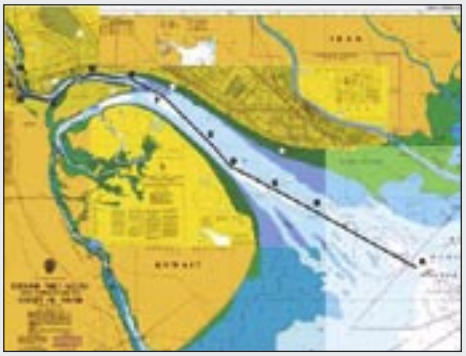
By the start of the operation an impressive MCM Task Group had gathered which included a total of 10 MCM vessels (MCMVs). This comprised the UK's MCM On Call Force (listed at Annex B), supported by RFA SIR BEDIVERE, with the four ships of the US MCM Division 31 permanently based in Bahrain and only 36 hours' steaming from Iraq, together with a squadron of US MCM helicopters.

As operations approached, the US CH-53 helicopters, with a new towed influence sweep, were augmented from the US and divers from the RN, USN and Royal Australian Navy were poised in USS GUNSTON HALL. In addition, the hydrographic vessel HMS ROEBUCK was assigned to the Task Group, providing valuable data and an ability to survey approaches and routes rapidly.



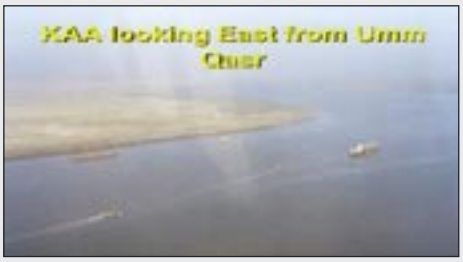
To speed up operations, the RN had leased the German Sea Fox Mine Disposal System, which was optimised for operations in strong tidal streams and poor visibility, and a remote-controlled Shallow Water Influence Mine Sweep System.

MCM operations started with a patrol boat sweep of the Khawr Abd Allah to intercept any minelayers, in parallel with the seizure of the Al Faw peninsula by land forces. Two minelayers with rather primitive but highly effective covert minelaying systems were intercepted, still with over 60 mines on board. This focused the minds of the MCMVs as they pushed forward, with the weather adding its own challenge in the form of 60 knot winds and sandstorms.



HMS BROCKLESBY led the initial Surface MCM group controlling SWIMS, followed by the command MCMV, USS DEXTROUS plotting and reporting seabed contacts to the rest of the force. The following MCMVs then relocated, detected and destroyed mine-like contacts thereby widening the channel.

As the waterway started to be cleared, UK and US diving operations commenced in Umm Qasr supported by Unmanned Underwater Vehicles - REMUS.



The initial breakthrough to Umm Qasr was completed in four days, followed by route widening - essential for the safe navigation of standard merchant ships - and clearance operations. Over 450 seabed contacts were discovered, of which 15 were mines.

On 28 March HMS SANDOWN led RFA SIR GALAHAD to Umm Qasr, bringing the first vital humanitarian aid to the people of Iraq. This marked the successful completion of one of the most advanced and tactically challenging MCM operations ever undertaken.

CHAPTER 5 – THE LAND ENVIRONMENT

Key Lessons

- The value of providing heavy direct and indirect firepower to support lighter forces has been reinforced by this operation. Additional opportunities need to be provided for lightly equipped ('light') brigades to train together with heavy forces. These issues are being addressed in MOD's Future Army Structure work.
- Equipment decisions taken in response to the lessons from Exercise SAIF SAREEA II were vindicated during this operation.
- Heavy armoured vehicles, such as Challenger 2 and Warrior and AS90 performed well in the context of the conditions and threats faced on this operation.
- The fleet of smaller reconnaissance vehicles provided a valuable capability that underscored the philosophy of reconnaissance using stealth. These vehicles again demonstrated their utility during stabilisation operations.
- The modified SA80 A2 rifle worked well under the testing conditions in Iraq. The provision of the Minimi Light Machine gun and SA80 Underslung Grenade Launcher specifically for this operation was also greatly valued.
- Enhanced Combat Body Armour proved effective in reducing casualties. Its inclusion in standard equipment issue is under consideration.
- The ability to operate confidently and effectively at night enhances force protection and capability, not only on the battlefield but also for logistic support. The Department is reviewing the scales of issue of night vision equipment.
- Expeditionary campaign infrastructure should be provided in sufficient quantities and in the right timeframe to ensure that accommodation and personnel support services are available for deployed UK personnel on sustained operations, particularly in arduous locations.

Introduction

5.1 This operation used a combination of lightly equipped and heavy forces to great effect and achieved a far higher level of integration than had previously been possible. The equipment available to UK land forces was technologically far superior to that of the Iraqis and allowed our troops much greater freedom of manoeuvre. The programme of upgrading the ballistic protection of many of the major UK armoured vehicles enabled them to operate in the face of higher levels of threat. Furthermore, the range of capabilities available to UK commanders allowed them considerable choice in how they conducted the battle. Overall, land equipment performed well and reliability levels were often exceptionally high despite the challenges of a very demanding environment.

Light Forces

5.2 On this operation UK light forces fully demonstrated their strategic deployability, with 3 Cdo Brigade conducting the initial assault and 16 Air Assault Brigade securing the Rumaylah

oilfields - both key early successes. These light forces were well prepared, trained and equipped for their initial tasks; however they became more vulnerable as they moved north and came into contact with more capable enemy weapons systems. However, changing the force mix - specifically the regrouping of Challenger 2 and AS90 self-propelled artillery to support them - mitigated these limitations, particularly in the urban environment or where the conventional threat was greatest. The operation confirmed that light forces, enabled by joint and combined arms, particularly from the air, can deliver heavy effect.

Armoured Vehicles and Artillery

5.3 Capable of day or night operation in a variety of challenging terrain and scenarios, UK heavy forces played an important role. They conducted dynamic and rapid manoeuvre, and showed their value in both open terrain and more complex urban environments. Appliqué armour fitted to Challenger 2 and Warrior prior to the start of the operation was particularly successful and none of these vehicles were lost due to enemy action. The high level of protection and firepower of Challenger 2, Warrior and AS90 provided UK heavy forces with an advantage in encounters with Iraqi regular and irregular forces and enabled peace support operations. That said, the Iraqis used very few effective anti-armour weapons and coalition ground forces operated throughout under the umbrella of air supremacy.

A Scimitar and armed Land Rover on patrol in southern Iraq

5.4 The deployed fleet of 116 Challenger 2s fired a total of 1.9 tonnes of Depleted Uranium (DU) and 540 High Explosive rounds, whilst the 36 AS90s and the 105mm Light Guns fired around 9,000 and 13,000 artillery rounds respectively; some 2000 of the former were bomblet shells. The Challenger 2 was used to provide very precise firepower effects, in circumstances where the risk of collateral damage prevented the use of artillery. This was crucial when operating in cities and towns such as Basrah and Az Zubayr. Artillery was critical in preventing freedom of movement of enemy forces in the open battlefield. DU munitions were used because of their penetrative capability against armoured vehicles. Whilst there is no reliable scientific or medical evidence to suggest that DU has previously been responsible for post-conflict incidences of ill-health, all UK personnel who served in Iraq will have access to biological monitoring.

5.5 Smaller reconnaissance vehicles in the Combat Vehicle Reconnaissance (Tracked) fleet were also highly valued. The improved levels of ballistic protection fitted to these vehicles successfully reduced the risk from small arms and mines. Their utility in this operation reinforced the requirement for maximum mobility, whilst maintaining stealth in order to carry out successful reconnaissance missions. The increased armour protection improved the utility of this equipment in the light armour role. In the reconnaissance role these vehicles proved highly effective, with crews able to locate targets and coordinate air support to attack them.

A Scimitar and Spartan of the Queen's Dragoon Guards train in the desert

5.6 The Swingfire anti-tank guided weapon system, which is fitted to some UK reconnaissance vehicles, was also of great utility during the combat phase. It was the longest range, integral weapon system available to reconnaissance units and was used in approximately half of their attacks despite representing only a quarter of their main weaponry.

5.7 Exercise SAIF SAREEA II in Oman in 2001 exposed a number of equipment issues pertinent to operating in the desert environment. These included the impact of the desert environment on Challenger 2 and the AS90 self-propelled gun. As a result, plans had been put in place to modify these vehicles for operations in desert environments by 2005. Once contingency preparations for deployment to Iraq began in autumn 2002, the Department accelerated these modifications. Challenger 2 was fitted prior to the operation with specialist filters and fans together with skirting to reduce dust ingestion. The procurement of air conditioning units for AS90 was also advanced, and while there was not time to fit these before the start of combat operations, the combat phase was completed before day time temperatures rose sufficiently high to affect AS90's excellent performance. In the event, all of the UK's armoured vehicles were found to be highly reliable during this operation, with average availability rates for the combat phase of 95% for the Challenger 2, 88% for Warrior, and 82% for the AS90. The ageing armoured engineer vehicles also performed very well, with availability levels of 84-100%. Only the Combat Engineer Tractor, introduced into service in the 1970s, experienced availability levels below 50%, although this did not lead to particular operational difficulties. This last vehicle is scheduled to be replaced when a new fleet of armoured engineer vehicles (Terrier) is brought into service in 2008.

Personal equipment

5.8 Standard issue black army boots and green combat clothing are designed to be used in temperatures up to 35°C and 39°C respectively. The highest temperatures reached in the south of Iraq during the combat phase averaged only around 31°C. Nonetheless given that the temperature was likely to rise to over 50°C during the summer months, and the need for appropriate camouflage colours, the Department prepared to issue desert clothing to all deploying forces, as discussed in Chapter 8. Notwithstanding the localised shortages that occurred, the necessary compromise in clothing designed for hot climates between robustness against wear and tear and the use of lightweight material to improve comfort did not satisfy all users. The fabric used to satisfy these competing demands remains under review by the Defence Logistics Organisation. However, all clothing and equipment provided to Service personnel is tested, subjected to 'consumer' trials and procured to a high quality and reliability standard - indeed, quality standards form part of the original contract requirements. MOD personnel also visit contractors both during and after production to ensure that the required standards are met, and further random checks are carried out on delivery of the clothing to the storage depot.

5.9 Enhanced Combat Body Armour provided personnel with significant levels of protection. Initial analysis of data from the operation by the Defence Science and Technology Laboratory (Dstl) has indicated that body armour reduced the number of US forces killed in action from torso wounds by at least 50% (possibly up to 90%), and those killed in action overall by over 20% (possibly up to 32%). Although data was not available to conduct an analysis for UK soldiers, the results can be regarded as indicative. The difficulties surrounding the supply of body armour are described in Chapter 8.

5.10 The provision of a night vision capability to some soldiers through a Head Mounted Night Vision System and other thermal imaging equipment such as Lion and Sophie improved the ability of our forces to operate at night. The improved shared situational awareness such equipment provided also greatly enhanced their operational effectiveness. These systems were used for surveillance and target acquisition in close combat, and were found to be particularly effective in the urban environment. Vehicle commanders and support troops also used this equipment to enable marshalling and logistic manoeuvre to be carried out at night. The majority of these systems were obtained specifically for the Iraq operation through Urgent Operational Requirement (UOR) action following their excellent performance in operations in Afghanistan.

5.11 The small arms used by UK forces during this operation were also highly effective. Lessons related to previous problems with the maintenance regime of the modified SA80 A2 rifle had been implemented, and units expressed confidence in its performance. The rifle was used for the first time in Iraq in combination with the night vision system mentioned above. This

enabled our infantry to move and to acquire targets simultaneously at night, a potent capability enhancement. Infantry effectiveness was also significantly enhanced by the procurement through UOR action of additional individual weapons systems. The Minimi light machine gun for example was widely used and praised for its effectiveness. It was considered to be a major factor in the speed of manoeuvre on the ground and contributed significantly to successful infantry operations, particularly in urban environments. The SA80 Underslung Grenade Launcher, which had previously proved its worth in Afghanistan, also performed well, although it was not delivered in time to everyone. A programme to procure this weapon for land forces is now underway.

5.12 The shortage of UK Expeditionary Campaign Infrastructure (ECI) had been noted on recent operations and exercises (eg. SAIF SAREEA II). A number of UORs addressed this shortfall, although delivery of this equipment was not timed for its use during the deployment and operational phases. During these phases of the operation UK troops were accommodated using US contracted accommodation and more basic tented accommodation. Since the end of hostilities air-conditioned Temporary Deployable Accommodation has been constructed in Iraq (see paragraph 11.29). The quality of this accommodation has won much praise.

British soldiers are briefed on the new Minimi light machine gun

A Challenger 2 from the Queen's Royal Lancers in Basrah

THE BATTLE FOR BASRAH

In order to accomplish its mission and tasks, 1 (UK) Armoured Division needed to achieve success in five key areas: the Iraqi Armed Forces would have to be defeated (in this context meaning unable to interfere with coalition operations); Iraqi irregulars would have to be overcome; the southern oilfield infrastructure – Iraq's future wealth – seized intact and defended; the port of Umm Qasr captured and opened for use; and Saddam Hussein's regime removed from control of urban areas, critically Basrah, Iraq's second largest city.

Very clear direction to the Division, and the time devoted to analysis as the force built up in Kuwait, enabled comprehensive planning at all levels. This meant that all units in the Division understood the overall plan, their part in it, and the effects and outcomes required.

Four days into the campaign the Iraqi *51st Division* had been removed from its defence of the oilfields. 3 Commando Brigade held critical oil infrastructure at Al Faw and the port of Umm Qasr. 16 Air Assault Brigade held the vital oilfield at Rumaylah and threatened Iraq's *6th Armoured Division* to the north of Basrah to such an extent that it could not interfere with coalition operations. 7 Armoured Brigade held the bridges over the Shatt-Al-Basrah waterway to the west of Basrah. Although it came under constant attack from Iraqi conventional and irregular forces, this was the most crucial ground to hold in order to achieve the overall plan of protecting the right flank of the US advance to isolate Baghdad.

Meanwhile other elements of 7 Armoured Brigade were coming under fire from irregulars operating in and around the town of Az Zubayr. UK troops came under a hail of machine gun and rocket fire every time they went near the town. The powerful Brigade could have entered Az Zubayr (population 100,000) immediately, and even, subsequently, Basrah (population 1.25 million). But this would have inflicted unnecessary military and civilian casualties and considerable damage. The need to avoid comparisons with Grozny or Stalingrad influenced the plan – indeed such comparisons were probably what the Saddam regime wanted, in the hope of prompting a call by the wider International Community for an end to the conflict. Instead 7 Armoured Brigade maintained the initiative through intelligence-led precision strikes and raids on regime activists, and physical and moral support for the oppressed community. Checkpoints around Az Zubayr controlled movement and provided a point of contact for local people to talk to our forces as well as a base from which both humanitarian aid and offensive operations could be mounted. The intelligence thus gleaned proved pivotal.

In the meantime, 3 Cdo Brigade advanced towards Basrah from the south, fighting to secure the town of Abu Al Khasib (population 100,000), 10 km to the south east. In some areas the Brigade met very stiff resistance and was engaged in protracted firefights including hand to hand combat over the period 30 March to 3 April before the area was secured.

After a week of these operations 7 Armoured Brigade, seizing every opportunity, built up battlegroup-sized lodgements which then expanded to the extent that by 1 April the Brigade held Az Zubayr and the irregulars there had been killed, captured or had fled. Meanwhile similar actions around Basrah were increasing in volume and tempo, many stemming from initiatives at company, squadron and even platoon or troop level. These, combined with precision attacks against regime targets by air, aviation and artillery served to weaken the enemy's will to fight. UK land forces were also supported by coalition aircraft, for example by maintaining air superiority and providing Close Air Support. Although at no time did UK troops lay siege to Basrah, the raids mounted from the strongholds on the Shatt-Al-Basrah bridges, together with an innovative information operation, penetrated deeper into both the city and the minds of those who resisted. The disruption and piecemeal destruction of the regime within Basrah strengthened the courage of local Iraqis desperately wanting to be liberated. Importantly, the regime was losing face with its own people.

A succession of raids on 4/5 April significantly weakened the Ba'ath leadership in the city. The knowledge that their vice-like grip on Az Zubayr had been overcome in just ten days, the sight of UK troops patrolling and helping local people in the now liberated towns of Al Faw, Umm Qasr and Rumaylah, and the realisation that US forces now threatened Baghdad, all helped create the right conditions on 6 April for full entry into Basrah and the removal of the regime there. Some resistance was quickly overcome by superior UK firepower, the excellent protection offered by Challenger tanks and Warrior armoured infantry fighting vehicles, and UK troops' resourceful determination. In some places irregulars fought with great venom and fanaticism. Nevertheless UK forces stuck to their task with great courage and completed it with breathtaking speed and mercifully light casualties. By 7 April Basrah was liberated, the local regime removed, and reconstruction underway.

Royal Marines pass under a monumental gateway in Basrah

CHAPTER 6 – THE AIR ENVIRONMENT

Key Lessons

- The targeting authority delegated to UK commanders in theatre was significant and enabled them to conduct operations responsively and flexibly.
- Effects-based operations require improved methods of accurately assessing the result of attacks on targets.
- The UK's precision attack capability has developed significantly since 1991 and made a major contribution to the successful conduct of the coalition's high-tempo operation. Investment in precision guided munitions following the lessons from the Kosovo campaign was fully vindicated during this operation. The UK's weapon stockpile planning is being reviewed accordingly.
- The RN Tomahawk cruise missile again demonstrated its utility as a long-range weapon capable of creating tactical, operational and strategic effect.
- The new RAF Storm Shadow stand-off precision missile proved highly accurate.
- Although support for land forces from the air worked well, there remain areas for improvement. For example the coalition process for planning and tasking aircraft for high-tempo operations needs to be more flexible, and additional joint and combined land-air training is required. MOD has initiated a study into these issues.
- UK forces need a concept for urban operations that determines the role of Close Air Support in that environment. Precision weapons with lower explosive yield would have increased the contribution of UK aircraft to such operations.
- The operation underlined the value of multi-role aircraft such as the Tornado GR4 and Harrier GR7.
- Coalition Unmanned Air Vehicles (UAVs) offered versatile capabilities as both surveillance and reconnaissance, and offensive platforms, and demonstrated that they will play a key role in the future joint battle.

Introduction

6.1 This operation witnessed a genuinely combined air campaign, with RAF and US Air Force assets closely integrated. Coalition air assets were used to great effect by combining resources to support both the effects-based precision campaign against deep Iraqi regime targets and the concurrent close land battle. Air supremacy was quickly achieved due to the technical and numerical superiority the coalition displayed in the air, the Iraqi regime's failure to deploy its airforce, and because Iraqi ground-based air defences, although used extensively, proved largely ineffective. Furthermore, 12 years of UK/US operations to enforce the UN no-fly zones over Iraq had familiarised coalition forces with the area and restricted the regeneration of Iraqi air force and air defence capabilities. The co-ordinated use of coalition air power quickly created the conditions that allowed land forces to achieve high rates of manoeuvre and tempo in response to enemy activity. In particular the coalition air component significantly reduced the ability of Iraqi forces to use tactical and operational manoeuvre; indeed, after the war, captured senior Iraqi General Staff officers reported that the fighting effectiveness of the Republican Guard Divisions had been largely destroyed by air strikes.

6.2 RAF air assets made a notable contribution to the overall air campaign, and included a number of specialist capabilities not available in the US inventory. RAF attack aircraft were flexible in supporting both the strategic bombing campaign and the coalition land battle. Lessons from Kosovo in 1999 had led to the procurement of Maverick missiles and Enhanced Paveway munitions. For this operation these weapons were complemented by submarine-launched Tomahawk missiles as well as new capabilities such as the RAF's Storm Shadow cruise missile, which could attack heavily protected, hardened facilities from a distance of over 230 km. Although fewer RAF aircraft were fielded than in the 1991 Gulf Conflict, increased use of precision weapons allowed our forces to deliver greater effect, whilst minimising collateral damage. In addition to providing strike aircraft, the RAF also made important contributions to airspace control, reconnaissance and transport capabilities. The RAF tanker fleet was especially highly valued by the US, providing over 40% of its effort in direct support to US aircraft, particularly US Navy and Marine Corps aircraft operating from the US carrier battle groups. The Joint Helicopter Command also offered much in terms of transport, reconnaissance and protective firepower. Specific lessons are described below.

A Tornado GR4, armed with two Storm Shadow stand-off missiles, is prepared for a sortie

Targeting

6.3 The UK assisted in the development of a list of over 900 potential coalition targets to overwhelm the Saddam Hussein regime and its security forces and to degrade the command and control capacity of the Iraqi Armed Forces. These targets included key military installations, weapon sites, command and control centres, notable regime targets and communications networks. The targeting plan was determined with precise military effects in mind, utilising the minimum proportionate force necessary for each target, and seeking as far as possible to avoid civilian casualties or damage to Iraqi infrastructure. Recent lessons from Afghanistan and other operations enabled a coherent plan to be refined through close co-ordination between US Central Command planners, MOD and the Permanent Joint Headquarters (PJHQ) in the UK and our National Contingent Commander in the Gulf. Significant targeting authority was delegated to commanders in theatre. However, all UK targets were defined within parameters agreed by Ministers, and legal and political advice was available to those approving targets at all levels. Where potential targets fell outwith the delegations, they were submitted through PJHQ to MOD's targeting organisation, who presented them for approval to Ministers for approval. As well as approving all targeting operations that were prosecuted using UK assets, or conducted from UK bases, on a number of occasions the UK influenced US specific target plans, highlighting the close UK/US relationship throughout this operation.

6.4 Clear parameters were set for the operational use of UK forces to guide the actions of commanders and individuals alike. These covered matters such as strategic level targeting direction down to specific instructions to troops on the ground on the use of personal weapons. For this operation, significant delegated powers were given to in-theatre commanders, enabling them to make rapid military decisions, including the authority rapidly to attack time sensitive targets as intelligence became available. The rigorous targeting process minimised damage to the main Iraqi infrastructure.

6.5 During any operation the relative priorities of targets are continually reassessed, a key factor in which is an evaluation of the effectiveness of previous attacks. Surveillance and

reconnaissance platforms as well as satellite imagery are a major source of this intelligence. However, although these sources were useful in previous operations when the intent was to destroy fixed installations, during this operation increased emphasis was placed on creating particular effects – possibly not destruction – and a significant proportion of targets were also mobile. Current surveillance and reconnaissance systems have limited capability in these areas and further work is required to address this shortfall for future operations.

Weapons and Munitions

6.6 The extensive use of precision weapons was vital in delivering an overwhelming, high tempo and effects-based air campaign. Around 85% of RAF munitions used were precision guided, either by Global Positioning Systems (GPS) or by laser or both, with just 138 unguided bombs being used. This demonstrates a huge leap forward in capability since the 1991 Gulf conflict, when the proportion of precision guided munitions was around 18%, improving to 25% for the Kosovo campaign in 1999.

6.7 Not all of this capability was delivered from aircraft. The Royal Navy's submarine-launched strategic Tomahawk cruise missile again demonstrated its usefulness, providing a long-range, precision capability to project combat power from the sea. This weapon was highly accurate and has both strategic and tactical utility.

6.8 The RAF's Storm Shadow cruise missile was employed against high-value, heavily fortified targets such as communications bunkers. This air-launched cruise missile proved to be highly accurate, providing the UK with a world-leading stand-off capability against hardened targets.

6.9 These two major systems were supported by a range of other precision-guided munitions. For example, the Enhanced Paveway II and III bombs demonstrated the advantages of using, smart, all-weather capable weapons to minimise collateral damage. Furthermore, these weapons offered the flexibility to re-programme new target positions whilst airborne. This proved vital in the fast moving battle that took place, where time sensitive targeting has become increasingly important. Moreover, their dual-mode guidance system meant that they could be delivered using laser guidance if accurate target co-ordinates were not available. Evidence gathered from Iraq since the end of hostilities has shown that both Enhanced Paveway II and III worked well.

6.10 The Maverick anti-armour missile was also used for the first time on this operation and proved its utility for rapid attacks on mobile targets. The standard infra-red guided Maverick was supplemented by the 'TV' guided version. The TV Maverick's enhanced resolution of the image displayed in the cockpit improves a pilot's ability to destroy small tactical, mobile targets. As a consequence, during the favourable daylight hours, TV Maverick could be fired at greater ranges from the target, reducing the risk to the pilot from enemy air defence systems. The Maverick missile proved a useful addition to the range of available RAF munitions, and the quantities held of both infra-red and TV versions are under review.

6.11 There was a continuing military requirement for the RAF to use a small number of cluster bombs. However they were only used against appropriate targets such as widely dispersed armoured vehicles and artillery, or mobile targets, which are ill-suited for precision weapons.

Operations against Enemy Land Forces

6.12 Despite the clear success of the air campaign, several areas for improvement have been identified. Currently, production of the daily Air Tasking Order is based on a 72 hour planning cycle. Although large numbers of aircraft were tasked to support land forces, further work is required to compress the planning cycle and improve the command and control, and coordination, of Interdiction and Close Air Support (CAS) missions. Although some combined land-air training is carried out, lack of experience in requesting, co-ordinating and delivering CAS missions (missions in support of land forces) was apparent. The prevalence of CAS missions in this campaign

suggests there is a need to conduct more training in support of this role. To address these and other issues MOD has initiated a review of air support to land forces.

6.13 A relatively new feature of this operation was the requirement for air assets to conduct CAS in an urban environment. The use of weapons with a large explosive yield on CAS missions was often not possible owing to the risk of collateral damage. The lack of smaller precision-guided weapons prevented the RAF from providing full support to land forces in urban areas. Although RAF aircraft delivered inert 1000lb bombs to minimise collateral damage, these often did not create the desired effect.

6.14 The CAS effort was also hampered by the inability to provide sufficiently accurate co-ordinates for mobile targets. The majority of land forces plot target positions on maps, rather than using GPS equipment. Furthermore, GPS information on mobile targets provided by land forces was sometimes quickly out of date, underlining the need for pilots to reconfirm mobile targets by sight before committing to an attack. In order to conduct this type of 'seek and destroy' mission, additional aircraft were fitted with targeting designation systems - the Thermal Imaging and Airborne Laser Designation (TIALD) pod. Thirty such pods were deployed for this operation, and work is in hand to determine the utility of data-linking the imagery to ground stations and other aircraft. The TIALD pod was also used extensively during the campaign as a 'non-traditional' surveillance and reconnaissance tool in order to monitor potential Iraqi SCUD sites and tank positions.

6.15 The capability of RAF Tornado GR4 (fitted with the new RAPTOR pod) and Canberra PR9 aircraft to provide high quality imagery in near-real time was highly valued by the coalition. Another asset used for 'non-traditional' surveillance and reconnaissance was the Nimrod MR2 (which is normally used in the maritime arena). These aircraft supported operations in western Iraq, providing a radio relay capability as well as surveillance and reconnaissance information.

6.16 Several RAF aircraft were employed in a combination of roles. For example, the Tornado GR4 and Harrier GR7 were used to undertake both tactical reconnaissance and attack missions, including missions in support of ground troops. Their multi-role capability was especially useful in adapting to changing requirements as the campaign progressed.

6.17 RAF E-3D airborne early warning aircraft (AWACS) worked seamlessly with US Air Force E-3s to provide continuous coverage of one of the four AWACS orbits, throughout the warfighting phase of the operation. Air surveillance assets were also provided by the Royal Navy. The Sea King Mk7 Air Surveillance and Control System performed well using its Searchwater 2000 radar, normally used over water, to provide battlefield surveillance and target cueing for UK land forces. The radar was able to detect moving enemy vehicles, which could then be attacked by Lynx helicopters. At times, the Sea King provided the only dedicated stand-off sensor coverage

The sun rises over two RAF airborne early warning aircraft

for 3 Commando Brigade's operations on the Al Faw peninsula. However, in common with other helicopters, the Sea King is inherently vulnerable to ground-to-air threats, and following the experience on this operation, the utility of the Sea King in this joint role is being explored further.

6.18 Extensive use of Unmanned Air Vehicles (UAVs) enabled the coalition to conduct unrelenting operations, often in heavily defended areas such as those around Baghdad. Although the UK's Phoenix UAV, a first generation system, had a more limited capability than the US systems, it played an important and highly valued role in support of UK land forces, and demonstrated the increasingly key role UAVs may play in the joint battle as they become more capable. In all, Phoenix UAVs made a total of 138 flights during the operation. Of these flights, 23 ended in either the air vehicle being lost or damaged beyond repair, with a further 13 suffering damage that was repairable. The majority of losses were due to the technical problems of working in such an extreme climate. Phoenix was mostly used to locate targets for attack, and during the first few days of the campaign it operated almost 24 hours a day. Subsequently, the system was used mostly at night to maximise the resolution of its thermal image sensor.

A US Navy Sea Knight helicopter passes an RAF Chinook

Helicopter Operations

6.19 A variety of helicopters, such as Chinook, Puma, Lynx, Gazelle and Sea King were provided by the Joint Helicopter Command in support of operations. These helicopters were heavily tasked throughout, working closely with a variety of coalition formations to ferry troops, equipment and supplies forward into Iraq in addition to the roles of casualty repatriation and refugee transportation. Their utility across a range of tasks showed that a mix of medium and heavy lift helicopters enhances operational flexibility. Owing partly to support from integrated intelligence, surveillance and reconnaissance assets and other offensive platforms, no UK helicopters were lost to enemy fire, even in intensive combat.

6.20 Several potential safety issues raised during this operation highlighted the need for support helicopters to be optimised for ship operations. Similarly, ships need large aviation platforms if heavy lift helicopters are to be operated safely and quickly.

6.21 The operational UK helicopter fleet does not yet contain 'attack' helicopters, although it includes a number of armed helicopters. Despite the need to operate at a distance for self-protection, RN Lynx and Gazelle helicopters provided effective armed support throughout the warfighting phase of the campaign in the Al Faw Peninsula, firing 49 TOW missiles, destroying tanks, armoured personnel carriers and bunkers. The contribution of these helicopters showed the potential utility of Apache helicopters in the provision of fire support during amphibious

operations and across the battlespace. There are also potential lessons for the future utility of the UK's new Apache attack helicopters from the US experience in Iraq with its Cobra and Apache helicopters. This operation saw the first operational use of a combined arms aviation battle group, 3 Regiment Army Air Corps, equipped with Lynx armed with TOW missiles and Gazelle. As part of 16 Air Assault Brigade, the battle group had its own mission and area of operations in which to prosecute attacks using direct and indirect fire from infantry, armour, artillery and fast jets. Although the helicopters were engaged in direct firefights, firing 39 TOW missiles against Iraqi tanks and other vehicles, none were lost during such engagements.

THE RAF AIR CAMPAIGN

"…The Divisions (Republican Guard) were essentially destroyed by airstrikes when they were still 30 miles from their destinations…the Iraqi will to fight was broken outside Baghdad." Col Ghassan, Republican Guard, Iraqi General Staff
"We never really found any cohesive unit, of any brigade, of any Republican Guard Division." Col William Grimsley, 1st Brigade Commander, 3rd (US) Infantry Division

Two night time missions over Iraq illustrate the RAF's current offensive capabilities and indicate the way in which Network Enabled Capability will enhance air power in the future. The first shows the RAF's ability to deliver very precise attacks against heavily defended targets and to penetrate hardened facilities while minimising risk to the launch aircraft. The second demonstrates how an RAF attack aircraft and a US Air Force UAV, remotely controlled from the USA, were able to attack a target even though the respective crews were on opposite sides of the globe. Together, these capabilities enable the RAF to achieve precise campaign effects, at range, in time.

On 21 March 2003, four Tornado GR4s, each armed with two Storm Shadows, the RAF's newest and most accurate weapon, took off from their base in Kuwait. Their targets that night were Iraqi air defence operations centres housed in bunkers at Taji and Tikrit, both key elements of the Iraqi command and control network. Released into service only days before, Storm Shadow was the most effective weapon in the coalition inventory to penetrate these hardened targets. Storm Shadow's stand-off capability also enabled the attack to be prosecuted from outside the very dense Iraqi air defence missile engagement zones surrounding the targets, reducing the risk to the aircraft and crews.

Planning the sorties earlier that day had been relatively straightforward, albeit punctuated by three air raids as Iraqi surface-to-surface missiles were launched at Kuwait. The Air Tasking Order had been issued the night before and detailed how over 2000 coalition aircraft including RAF Harrier GR7 offensive support aircraft, Tornado F3 fighters, VC-10 and Tristar air-to-air refuelling aircraft, E-3D airborne control aircraft, Nimrod and Canberra intelligence, surveillance and reconnaissance aircraft as well as US Air Force and Navy aircraft and UAVs were to co-ordinate their movements, attacks and recoveries. Ensuring that the formation took off on time was particularly important on this occasion because the airfield was to be used as a navigation point by sea-launched cruise missiles in the attack package shortly after take-off and any delay would jeopardise the cruise missile attack. Having refuelled from a VC-10 tanker, the formation set course deeper into Iraq but the lead pair of aircraft were soon engaged by an Iraqi SA-2 surface-to-air missile (SAM) system forcing the No 2 aircraft to jettison its fuel tanks in order to defend itself. The need to complete the attack successfully was paramount, so despite having insufficient fuel to complete the mission and return to base, the No 2 pressed on hoping to conduct post-strike air-to-air refuelling or, if necessary, divert elsewhere. Arriving at the launch point, all aircraft released their weapons successfully and returned to base (the No 2 aircraft diverting to an alternative airstrip). The following day, radar and electro-optical reconnaissance showed that all four targets had been struck precisely as planned.

In the second mission, on the night of 11 April, two Tornado GR4s took off from their deployed operating base to patrol just outside Baghdad. Refuelling from a VC-10 tanker in southern Iraq, the two aircraft flew northwards, the crews scanning the night skies around them through night vision goggles whilst on-board sensors sampled the electromagnetic spectrum to detect emissions from Iraqi early warning and fire-control radars that would indicate the launch of a SAM. RAF E-3D airborne radars monitored their progress north while Tornado F3 fighters guarded the airspace ahead and to their flanks to prevent enemy fighters interfering with the mission. Having checked in with the US Air Support Operations Centre (ASOC) embedded with the US Army V Corps on the ground, the pair waited in the designated patrol area pending tasking.

Eight thousand miles away and ten time zones to the west, a US Air Force captain was remotely operating a Predator UAV in the skies over Tikrit, north of Baghdad. The UAV's sensors were searching the ground for signs of Iraqi activity and sending the imagery via satellite back to the continental US. Ordering the Predator to zoom in on a suspicious object, the captain quickly identified an Iraqi SA-2 SAM system that had moved into a position from which it would be able to threaten friendly coalition aircraft. Relaying this information over a secure communications link to the ASOC, the Predator continued to monitor the site. Having evaluated the data, including the precise target latitude and longitude, the ASOC ordered the Tornado GR4s to move north towards Tikrit. Meanwhile, a US Navy EA-6B moved into position to jam the SA-2's radar system to mask the approach of the Tornados. Arriving in the target area, the GR4 crew quickly identified the SA-2 and, having confirmed that it was clear of civilian personnel and structures, launched a precision-guided, Enhanced Paveway II 1000lb GPS and laser-guided bomb towards the target. Moments later, the Predator's laser designator illuminated the SA-2 in order to guide the Tornado's weapon to the target. Shortly after launch, the GR4 crews watched the SA-2 system take a direct hit and confirmed its destruction. Turning south, the Tornados, now short of fuel, joined up with their VC-10 tanker, which had been directed by the E-3D to move further into Iraq to meet them. Having replenished the fuel reserves in their underwing tanks, the Tornados returned to their holding orbit, high above the Iraqi desert, and awaited their next task.

An RAF Tornado F3 on dawn patrol

CHAPTER 7 – WORKING IN A COALITION

Key lessons

- Close US/UK working relationships and liaison, both military and civilian, at all levels were key to coalition planning for the operation. Such relationships should continue routinely to be cultivated at every level with the US and other potential coalition partners. However, each coalition operation will be different, and key liaison appointments and requirements should be reviewed at the outset of planning for a new operation.
- The implications of maintaining contact and congruence with US technological and doctrinal advances should continue to be assessed.
- The UK must be prepared to operate with both traditional allies and less familiar partners. UK forces must be organised, trained and resourced for interoperability with partners.
- The UK's efforts to encourage key allies early on to contribute to the stabilisation force in Iraq were successful. Co-operation between MOD and the FCO, and co-ordination between the UK and the US, were key to this success.
- The coalition secured important assistance in the build-up to the conflict from a wide range of countries. However, Host Nation Support cannot be taken for granted: the UK should continue to cultivate both existing and potential international partners in emerging trouble spots in order to ensure access.
- Regular training and cross-fertilisation with US forces are required to promote interoperability when UK forces are deployed in a US-led or backed coalition. Achieving interoperability requires extensive information sharing between the US and UK.
- A Combat identification (Combat ID) concept of operations should be available early in the preparation phase of an operation. Doctrine and peacetime training need to reflect the Combat ID requirements of coalition operations.

Coalition Strategic Planning

7.1 Given the scale of its force contribution, the US inevitably led the planning for the campaign against Iraq. *First Reflections*[7] described how, although the UK did not make final decisions on the composition and deployment of its force packages until early 2003, we were able to work closely with the US and influence the campaign from initial planning to execution. This was achieved through high-level political contacts and regular dialogue at official level, as well as by the presence of embedded UK officers in key US headquarters.

7.2 The US is expected to continue to play a leading role in world affairs for the foreseeable future and remain the predominant military superpower. If the UK is to join the US in future operations, we shall need to continue to be close to US policy-making and planning and, subject to affordability, be able to operate with its technological dominance and military doctrine. This will require a clear understanding of, and involvement in, emerging US military and political concepts and doctrine. To this end, it will be essential to continue to sustain liaison with high levels in the Pentagon and key US headquarters.

[7] *First Reflections*: Page 32 para 6.2

7.3 Different groups of nations will continue to contribute to international and regional security in response to rogue states, terrorism and trans-national threats. In this context, UK forces, in addition to working with the growing coalition of nations now in Iraq, are likely to continue their current deployment pattern in support of NATO, EU and UN operations. However, the UK may also have to operate with unfamiliar partners and address consequent problems with force packaging, standardisation of procedures and equipment, and Combat identification (Combat ID). In this context, the significant contribution by UK Defence and Liaison staffs overseas, including Defence Attachés, to the planning and prosecution of the Iraq operation, underlined the importance of understanding the particular national sensitivities and objectives of allies and other nations.

Wider International and Coalition Issues

7.4 The UK played a major role in bringing key allies into the coalition through co-ordinated lobbying with the US. A coalition of some 40 countries was rapidly assembled, committing troops, providing logistical or basing rights or giving political support. This commitment has been sustained and expanded by ongoing diplomatic dialogue and by a number of conferences held in London by FCO and MOD. There are now 32 states contributing forces to the Multinational Stabilisation Force in Iraq, of which nine are in the UK's area of operations (see para 11.20).

7.5 Despite differences in the UN Security Council, the UK continued to work well with UN operations and agencies before and after the conflict. The UK also developed a good relationship with the International Committee of the Red Cross (ICRC) both in London and in theatre. UK support enabled ICRC staff to remain in Iraq and provide services during the conflict whereas most Non-Government Organisations (NGOs) and the UN withdrew. The Department for International Development also maintained a good relationship with the NGO community. Cooperation with the US and Japan at official level helped ensure that the International Energy Agency managed tensions in the international oil market well, thus containing the risks of an oil crisis.

A Tornado GR4 refuels from a KC-10 tanker of the US Air Force

Host Nation Support

7.6 The coalition secured important logistical and basing assistance in the build-up to the conflict from a wide range of countries, not only traditional allies. Nonetheless, the operation demonstrated that obtaining basing rights and other support from nations near the area of operations cannot be taken for granted. This risk can be mitigated by the adoption of a range of

measures including access to bases elsewhere, the possession of longer range, high-endurance platforms, and the use of capabilities that enable strategic access at a time and place of our choice. In this context, as described in Chapter 4, the UK Maritime Contingent's support to operations ashore in Iraq demonstrated the advantage of being able to provide support from the sea in addition to that provided from land bases and host nations. However, this is unlikely to provide more than a partial solution, and the UK will need to continue to cultivate existing and potential partners in areas of possible crisis in order to ensure theatre access, taking into account possible competition from coalition partners.

Interoperability

7.7 It is probable that any future UK medium- or large-scale war-fighting operation will be fought in a US-led or -backed coalition. Working with the US in a coalition brings political, diplomatic and military advantages, including the aggregation of capabilities, flexible war-fighting options and the sharing of intelligence and risk. UK forces need to be commanded, structured, equipped and trained with this in mind. Although the UK cannot afford to match US capability on a pro rata basis, it should be possible to achieve congruence by optimising key existing and emerging capabilities. UK forces' ability to work alongside US forces was fully tested in Iraq and many of the ensuing lessons concern interoperability issues, particularly communications. However, the first step towards interoperability is to ensure doctrine is coherent and relevant to US-led operations. For example, the ease with which 1(UK) Armoured Division integrated with the US 1st Marine Expeditionary Force was helped by similar doctrine, and the RAF's ability to integrate seamlessly with the US Air Force reflected 12 years of operating together in the no-fly zones over Iraq.

7.8 The overwhelming success of 'rapid, decisive operations' can be characterised by the combination of effects-based warfare and network centric warfare – a system of war-fighting that provides the best tools for the job, in the shortest time and with the greatest effect. The use of fast-moving, heavy effect forces, utilising 'smart technology', near real-time day and night shared situational awareness and network solutions, linked to on-station or long range air power, was validated in Iraq. The US ability to combine land and air operations and support them from the sea and from friendly bases at very high tempo enabled the mix and impact of joint assets to be adjusted to operational need or the unexpected, across the whole theatre of operations. The characteristics of speed, simultaneity, multiple choice of effects and precision seem to offer solutions to situations in which time is of the essence in achieving operational objectives by the use of force, and where the ability to influence rapidly the perception, will and behaviour of an opponent may be critical. This wide choice, effects-based approach is likely to dominate US doctrinal development and will require potential partners to adjust their force structures if they are to maintain congruence and contact with an accelerating US technological and doctrinal pre-eminence.

UK/US Operational and Training Experience

7.9 The planning and conduct of the Iraq operation was facilitated by the close professional relationship that has developed between the US and UK, not only as leading members of NATO, but also through numerous bilateral and institutional contacts, and the benefits of training and

A UK desert camp

operating together over many years (see paras 9.29 and 9.37). Some UK personnel deployed on the operation had trained regularly with the US and had developed a thorough understanding of US military culture and ethos, as well as their equipment, training and doctrine. This understanding partly offset the differences between UK and US military cultures and equipment.

Combat Identification

7.10 Combat ID enables military forces to distinguish friend from foe during operations, enhancing combat effectiveness while minimising the risk of accidental engagement of friendly or allied forces, otherwise known as fratricide or 'Blue-on-Blue' incidents. The range of measures taken to provide protection for operations in the Gulf was described in *First Reflections*[8]. Regrettably a number of fratricide incidents occurred which are under investigation. Experience in this and previous campaigns and the prospect of future operations of increasing pace, intensity and complexity indicate that efforts cannot be relaxed in this key area. MOD policy on Combat ID emphasises that minimising the risk of fratricide requires a combination of improved tactics, techniques and procedures, enhanced situational awareness and target identification devices. While our aim is to provide UK forces with as effective a Combat ID system as possible, regrettably no system is 100% failsafe, no matter how sophisticated the technology. Moreover, solutions must be interoperable with likely allies.

[8] *First Reflections*: page 25, para 4.15

CHAPTER 8 – LOGISTICS

Key Lessons

- The successful deployment of a similar sized UK force in less than half the time taken in the 1991 Gulf Conflict was a major achievement.
- A two star post of Assistant Chief of Defence Staff (Logistic Operations) has recently been created to improve the provision of timely and accurate logistics advice to the strategic planning process.
- Further work is needed to define the readiness stocks required to support the demands of expeditionary operations, taking into account the surge capacity of industry.
- Some shortages of equipment (mostly personal equipment and spares) were experienced. However, these did not have a significant adverse effect on operational capability.
- Responsibility for, and authority over, the operation of the overall deployment process needs to be strengthened.
- The new procedures established by the Defence Logistics Organisation (DLO) for this operation, in particular the establishment of the DLO's Logistics Operation Centre proved particularly valuable.
- The DLO was very successful in securing sufficient strategic lift to supplement MOD's own capability despite the potential volatility of the charter market in the face of political and commercial pressures. The Department nevertheless keeps under review the balance between MOD-owned and chartered air and sea lift assets to meet the required scale and speed of strategic lift.
- The ability to track equipment and stocks both into and within theatre is vital in maximising the UK's capability to conduct expeditionary operations. This process requires robust information systems that can cope with the volume and diversity of activity. The UK's capability in this area needs to be further strengthened.
- The services provided by civilian contractors in theatre during the operation worked well overall and, in some cases, were first class. The support that MOD offered to contractors was well received.

Introduction

8.1 This was the UK's first large-scale operation since the inception of the Defence Logistics Organisation (DLO) in April 1999. Providing logistic support over 3400 miles by air and 5000 miles by sea to units operating in a demanding physical and climatic environment was a considerable challenge, but one which was met with notable success. In broad terms, a deployment of roughly the same size as in the Gulf Conflict of 1991 was achieved in half the time. This achievement was all the more remarkable as operational security and the requirement not to prejudice the UN process limited early planning and engagement with industry until the Urgent Operational Requirement (UOR) process was announced on 25 November 2002. Furthermore, the continuing evolution of the overall campaign plan in the later stages of preparation, coupled with the speed of deployment, tested the agility and flexibility of the UK's logistic support structures and processes to the full. Notwithstanding the overall logistical success, some areas for improvement have been identified in order to maximise support to future UK operations.

Logistics Planning

8.2 The Chief of Defence Logistics (CDL) is responsible for the totality ('end-to-end') of the logistic process. Since the Strategic Defence Review in 1998 however, there has been no senior independent expert logistic staff embedded within MOD's operational planning teams able to provide strategic sustainability and logistic guidance at the centre of the Department. Drawing on the experience of this operation therefore, a new post, Assistant Chief of Defence Staff (Logistic Operations), was created in September 2003 to strengthen logistics representation within the Policy and Commitments staffs of the MOD. Together with CDL's continuing work on the 'end-to-end' logistics process, this will enable the Department further to improve operational logistic support to front-line troops.

Stockholdings

8.3 The DLO's remit is to supply UK forces with all the equipment they require where and when it is needed. In some cases this is achieved by stocking equipment in reserve for future use, although this is normally only cost effective for equipment required to support high readiness forces, or that cannot be purchased quickly. For example, under current planning assumptions MOD does not hold enough stock to match the requirements for a large-scale operation, but instead has mechanisms in place to purchase additional or operation-specific equipment when needed, within the assumed preparation time. Key to the success of this strategy is MOD's relationship with industry, as the Department relies on industry to provide stocks in time, often through the UOR and Operational Sustainment Funding processes.

8.4 As previously discussed, there was less time for preparation before this operation than generic planning guidance allowed for and consequently some equipment could not be bought in time. In some cases, this was compounded by the difficulty in defining the Services' requirements until the start of specific logistic planning for the operation and by the changes to the campaign plan. In other cases, individual units held fewer supplies than they should, some of which were out of date. However, although this resulted in some shortages in theatre, these were mostly in respect of personal kit and spares, and did not impact upon UK forces' overall ability to fight.

8.5 Some shortages of spares for both vehicles and helicopters were experienced. In the case of land forces these were resolved by creating a pool of spares, by removing parts from vehicles that were not being deployed. Such 'cannibalisation' is a pragmatic approach for deployments above small scale to maximise the availability of finite resources, especially for equipment that has been in service for some time, and has increasingly become common practice. For some older equipment, obsolescence means this is the only viable method for obtaining spares. Land forces nevertheless maintained a high level of equipment availability throughout. In the case of

Royal Irish Regiment vehicles prepare to depart for Iraq

helicopters, spares shortages are not easily overcome, given the long lead times for production of many components. Moreover, spares usage rates increase significantly whilst operating helicopters in a desert environment. Resource constraints precluded the provisioning of permanent packs of deployable spares. Instead, requirements were met by creating ad hoc packs using individual spares already on the shelf. Although this resulted in insufficient spares being deployed to theatre against the anticipated requirement, helicopter availability was in fact maintained at a reasonable level throughout the operation.

8.6 Before this operation, the Department held three sets each of desert combat clothing for 9000 personnel and 10,000 pairs of desert boots, sufficient to equip those soldiers held at the highest level of readiness. Despite a huge effort by industry and the Department, by the time the operation began a number of deployed Service personnel had not received the ideal quantities of

7 Armoured Brigade vehicles awaiting loading onto ships at Emden

desert boots or combat clothing. However over 40,000 pairs of desert boots and some 80,000 sets of desert clothing had been sent, sufficient to equip each Serviceman and woman requiring desert clothing with enough boots and two sets of clothing. While less than the ideal scaling of three sets of clothing each, this would have been a pragmatic solution to the shortage. However, tight timelines, inadequate tracking of equipment in theatre, and some instances of incorrect boot and clothing sizes meant that not all Servicemen and women received their allocation. These shortages did not significantly impair the ability to fight, since standard, non-desert equipment was designed to be used in the temperatures experienced in theatre at the time, albeit it did not provide the same camouflage effect (hence front line troops were the priority for the available desert equipment).

8.7 The decision (a change in policy) to equip all Service personnel whose role required it with Enhanced Combat Body Armour (combat body armour enhanced by the addition of ceramic plates) posed a challenge because there were insufficient stocks to meet the needs of a large-scale force. Through additional purchases, over 38,000 complete sets of body armour were deployed to theatre. This should have met the total requirement, but late delivery against an advancing timescale, coupled with difficulties in equipment tracking and control of issue, led to localised shortfalls. Priority was therefore given to those personnel on the ground whom commanders judged to have the greatest need, principally dismounted infantry.

8.8 There were also localised shortages of Nuclear, Biological and Chemical (NBC) protection and detection equipment, (such as NBC suits), again caused by sizing difficulties or equipment distribution and tracking problems. Other shortages were due to poor stock maintenance - for example the inspection regime for Residual Vapour Detectors had not been followed, leading to

uncertainty over serviceability. Nevertheless, through a combination of purchasing spare parts and rigorous re-testing of the equipment, the operational requirement was met. In another case, the availability of the Nerve Agent Immobilised Enzyme Alarm & Detector, which was due to be replaced, was affected by the obsolescence of the equipment. Action was taken by the DLO to recover stocks and spares from non-deploying units, and while this reduced the number of these detectors deployed to theatre, other detection systems such as the Chemical Agent Monitor were used to ameliorate the shortfall.

Deployment

8.9 The Iraq operation highlighted the logistic complexities involved in a large-scale operation. The deployment process is managed by many organisations, including the Permanent Joint Headquarters, the Defence Transport and Movements Agency (DTMA), the single Services, the Joint Force Logistic Component in theatre and the DLO. To support this deployment the DLO established several new initiatives including the formation of the DLO's Logistics Operation Centre (DLOC) with the task of coordinating the movement of all stocks to theatre. The DLOC was a success, providing far greater visibility and flexibility over the transport of equipment into theatre. The deployment process worked very well overall, albeit there is scope for further improvement. The Chief of Joint Operations had overall responsibility for the process, but had no direct means to command, control or direct the activity associated with it. The Department is now considering ways of strengthening this.

Newly arrived troops load their lorries

8.10 Planning for deployment of equipment to theatre was complicated by the switch to the southern option and the consequent speed of deployment constrained MOD's ability to construct a new deployment plan. The plan was therefore not totally coherent and comprehensive and the order of arrival of equipment was not always optimised. Some equipment used for in-theatre transport arrived late in the deployment, training ammunition arrived simultaneously with operational and sustainment stocks - in some cases very late in the deployment, and additional combat body armour arrived on the last of the ships. This reduced flexibility in preparations for combat operations, with deployed commanders finding they had insufficient control over what arrived when.

8.11 Examples of poor unit-level processes were also encountered, with a number of units not adequately equipped for deployment. Some troops were sent into theatre without standard issue equipment, while other units were slow to order the extra equipment they needed.

Transport by Air and Sea

8.12 The deployment of UK forces to the Gulf through a combination of air and sea lift was a significant success. Movement of equipment and personnel by sea allowed the build-up of a substantial force in the Gulf, with over 90% of the freight deployed by ship. Military sea lift capability benefited from the recent introduction, some 20 months early, of

MOD's four new roll-on-roll-off vessels procured through the Private Finance Initiative. These ships deployed 15,000 lane metres of equipment, some 11% of the total requirement, including vital port establishment equipment, ahead of the main force. They were supplemented by the charter of 60 commercial ships. The considerable additional capacity brought by the four C-17 aircraft on long-term lease to the RAF, together with the RAF's other air transport assets, deployed about half of the personnel and stores required to travel by air, again proving their value for rapid and assured deployment. A number of commercial aircraft were also chartered.

8.13 The charter of significant air and sea lift assets for this operation worked well, and reflected the fact that it would not be a sensible use of resources for MOD to own sufficient air and sea transport for infrequent large-scale operations. The costs of chartered air and sea lift capability were £53.5M and £70M respectively. Swift action by DTMA in approaching the charter shipping market, and in activating facilitating contracts with the charter aircraft market, enabled the requirement to be met. Although the changing threat levels in the region caused some nervousness in the civil aviation market, air charter companies maintained their support. The balance between MOD ownership of lift assets and reliance on commercial air and sea transport is kept under review.

8.14 There are strict regulations on the handling of ammunition in the UK. This includes limits laid down by the Health and Safety Executive on the quantities of ammunition that can be held and loaded onto transport ships at any one time. The scale of this deployment put a considerable strain on our existing ammunition handling facilities, leading to some delays in loading ammunition. The issue of temporary ammunition-handling licences provided some relief.

Logistic Information Management

8.15 During the operation the flow of logistics information between theatre and the UK was poor, particularly affecting the tracking of UORs into theatre. It was difficult to monitor the rates at which supplies were consumed, making it hard to determine when re-supply would be required. The lack of available information also reduced commanders' confidence in the logistics system, causing units to over-prioritise their requests and re-order equipment already en route. This added to the burden on the already over-stretched system. The processes required to identify, quantify and locate combat supplies and materiel became cumbersome, inaccurate and manpower-intensive and units frequently took shortcuts to move resources forward more quickly. This contributed to some of the stock shortfalls noted earlier.

8.16 These problems were caused by the continuing lack of a robust tri-Service inventory system, the ability to track equipment into and through theatre, and an information system capable of supporting this technology. This meant that commanders in theatre did not have real-time visibility of stocks held, hindering re-distribution to ensure the best use of available supplies. For example, stores such as ammunition and NBC suits held afloat were needed elsewhere in theatre as a higher priority.

8.17 The need to improve consignment tracking has been noted in post-operation reports and lessons exercises since the Gulf Conflict in 1991. Since then, MOD has sought affordable and technically reliable improvements to the capability it already has in this area. As a result of the lessons identified in 1991, two tracking systems were procured: VITAL (for the Army) and RIDELS (for the Navy). These are MOD-developed, bespoke systems, optimised for the individual Service. Both systems have been progressively improved and expanded over the years, but have been limited by their dependence on other information systems which were never designed to be part of a 'joined-up' supply chain.

8.18 For this operation, the UK decided to procure elements of the US Total Asset Visibility (TAV) system to improve stores tracking. The TAV equipment was progressively installed at nominated sites in the UK, Germany, Cyprus and in the Gulf. Its successful installation under an ambitious timescale was impressive. The tagging of consignments (i.e. containers and pallets rather than

individual equipment) by radio frequency signals improved the efficiency of delivery, whilst reducing the manpower required. The location of containers could then be determined remotely via secure internet access. Cross-referencing with the existing VITAL system identified the contents of each container or pallet.

8.19 TAV was introduced part way through the deployment however, with only limited numbers of systems and trained users. The system also only allowed equipment to be tracked as far forward as the major bases in Kuwait. Once the containers and pallets were broken down, and the contents transported to individual units, this visibility ended. As a consequence, large quantities of equipment, stores and supplies were reportedly 'lost' in theatre, including ammunition, body armour and NBC Defence equipment. This also made it more difficult to target high priority equipment for rapid onward distribution.

8.20 Much work therefore remains to be done. On its formation, the DLO launched a number of programmes aimed at delivering better stores- and asset-tracking capabilities. The asset-tracking component of this work is now being pursued as a new project, 'Management of Material in Transit'. In the short term the Department is extending the use of TAV, and has already increased the capability in Iraq to support the operation.

Support in Theatre

8.21 In theatre, the management of stores was carried out by the Joint Force Logistic Component which, once fully established, played a vital role in supporting deployed UK forces. Although based around an Army logistics brigade, its task was to support all three Services throughout the Gulf. Further work is being undertaken to study the mechanisms by which logistics support can be provided for a range of different operational requirements in the future.

8.22 The RN role in providing logistic support to land forces was described in Chapter 4. The ability to use amphibious capabilities such as helicopters, mexeflotes (motorised pontoons) and landing craft to land equipment and supplies over beaches adjacent to, but independent of, commercial ports was also a key factor in the rapid establishment of operationally capable forces.

Contractor Support

8.23 About 1500 civilian contractors were deployed into the Gulf region during this operation, providing mainly equipment and technical support, often under specialist Contractor Logistics Support and UOR contracts. Military personnel do not possess all the specialised skills required to maintain an increasing amount of technologically advanced equipment. Maintenance is often

A mexeflote

now the responsibility of the original equipment manufacturer, which has led to an increase in the importance of contractor support on deployed operations. Locally employed civilian contractors also supported the UK's catering and logistics effort. The services provided by contractors were often excellent, especially given the demanding conditions and short timescales. A notable example was the armoured vehicle dust mitigation and up-armouring programme. This included the fitting of extended side skirts, improved sealing, air filters and fans, and applique armour.

8.24 Experience on this operation demonstrated that MOD cannot necessarily rely on contractor support in regions where the threat level is high. Foreign and Commonwealth Office travel advice and the conditions in the Gulf affected some contractors' willingness to provide support. Two instances were reported of contractors refusing to deploy or remain in theatre. MOD will work with companies to identify triggers for the withdrawal of their support, and consider mitigating actions where appropriate.

8.25 This operation saw the first use of contractors formally deployed under a new MOD policy for contractors on deployed operations. In general, the support offered to these contractors worked well. There were a number of problems, including the availability of only limited advice on visa requirements, shortfalls in pre-deployment training and transport to theatre, and the issue of ID cards and protective equipment; there was also inadequate legal jurisdiction. There was a lack of a central focus for contractor issues. The incident in which two Kenyan sub-contractors were captured by Iraqi forces underlined the need to give further consideration to support for sub-contractors.

"FIGHTING IN THE DESERT"

Expeditionary operations require forces to be suitably prepared and equipped to operate in demanding environmental conditions. The desert environment of Iraq presented the coalition with significant challenges, against which a number of equipment improvements (such as the fitting of Challenger 2 with specialist filters, fans and skirting to reduce dust ingestion) and other preparatory steps were taken. The sandstorms early in the conflict phase and, later, the extreme summer temperatures demonstrated the debilitating effects the environment can have on people and equipment:

a. Acclimatisation Despite an acclimatisation programme, there were a number of heat casualties[9] when 3(UK) Division replaced 1(UK) Armoured Division at the height of summer. The initially limited amount of air conditioning units meant that there was sometimes no respite from the high temperatures, particularly during the day.

b. Helicopter Operations High temperatures reduced the load carrying capacity of all helicopters and created difficulties for groundcrew servicing the aircraft and aircrew attempting to rest. Helicopters parked on aircraft pans unsheltered from the heat suffered adverse effects on their systems.

c. Ammunition Storage Ammunition to the value of approximately £14M was written-off because of its reduced 'life expectancy' when stored unprotected in high temperatures.

d. Equipment Several equipment types, including radars, UAVs, airfield navigation aids and CIS, were less reliable in the high temperatures and dusty environment. In some cases the air conditioning did not cool equipment sufficiently and in others it caused condensation to form on sensitive electronic equipment. But for the SA80 A2, lessons regarding the

[9] 3(UK) Div heat casualties in the seven week period 15 Jul - 9 Sep: over 800 personnel required medical assistance, some 200 were returned to UK and 1 soldier died (a second death was possibly heat-related). For comparison, over 400 British soldiers died in Mesopotamia from heat-related conditions in a three week period in 1917.

maintenance regime required when operating in dusty conditions, which had been learned from operations in Afghanistan, ensured the rifle's effectiveness was second to none.

e. Personal comfort Clothing, food and accommodation can all contribute to combat effectiveness in the desert environment (not least through the improvement of morale). The desert clothing and boots procured for use by UK forces during the intense summer heat are described at paragraphs 5.8 and 8.6, and the air-conditioned Expeditionary Campaign Infrastructure, provided after the end of the combat phase at paragraph 5.12. In addition, the demanding desert conditions required the supply of up to 10 litres of bottled water per person, per day.

Meteorology

Running a global forecasting system, the UK Met Office provides forecast information for any location up to five days ahead. This service meets a range of national and international commitments, especially for Defence. In addition to this global picture, more detailed information is available for a limited area from a higher resolution forecast model. Trialled during Exercise SAIF SAREEA II, this concept was used operationally for both Afghanistan and then Iraq.

The Met Office's contribution to commanders, both deployed and at home, was an important element in the drive for information superiority. As campaign planning began, early guidance was provided on Iraq's climatology, followed shortly by seasonal and monthly outlooks that allowed informed operational decisions to be made. Key climatological details included the prospect of significant rainfall over high ground (falling as snow over 6000ft) and, during the spring, blowing sand in the south – both of which could severely impact operations[10].

Winter - December to March

- Cool days and cold nights with frosts, severe over high ground and in western deserts.
- Weather systems move from west to east but their associated cold fronts weaken as they move south and east.
- High rainfall over high ground falling as snow above 6000ft - lower at times.
- Hill fog over the mountains in the north.

Spring - April to May

- Gradual increase in temperatures - still occasional cold interludes.
- Often large rainfall in thunderstorms in the north and, with melting snow, can lead to flooding.
- Mainly north-westerly winds but vary around systems.
- Local lifted dust and blowing sand in the south.
- Extensive hill fog over high ground as warm air moves over colder land.
- Local overnight mist and fog patches.

Impact of Weather on Operations

Temperature

- Low temperature in north leading to icing and possible exposure.
- High temperatures leading to poor aircraft performance and high heat stress.

Weather

- Snow in the north making mountain passes difficult. Temporary risk of runway contamination.
- Areas of fog and mist during the colder months especially in river valleys.
- Widespread lifted dust and blowing sand during the summer months affecting visibility, engines and health.
- Areas of haze affecting slant visibility.

Impact of Weather on Operations

Cloud

- Low cloud during rainfall in the north giving hill fog patches.
- Icing/turbulence in cloud mainly during the colder months.

Wind

- Occasional strong winds near low pressure areas and the passage of fronts leading to gusty conditions.
- 'Shamal' winds occasionally strong leading to areas of dust/sand and isolated dust storms.

Visibility

- Reduced in precipitation, dust, sand, mist and fog. Often poor in haze during the summer months.

[10] The sandstorms of 26/27 Mar were factored into operational planning

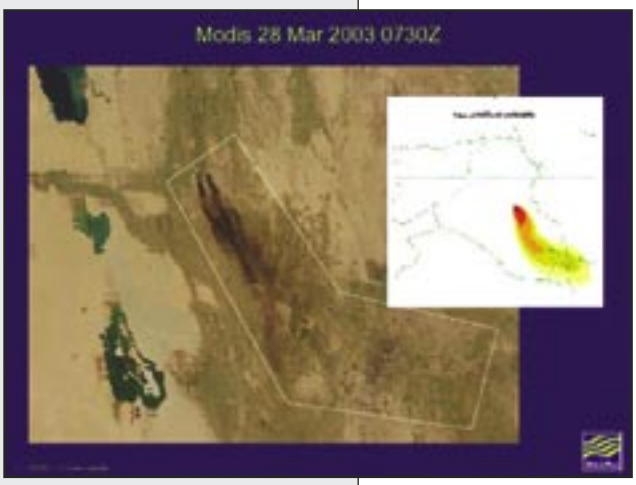
The Defence Met Centre at HQ RAF Strike Command analysed the output from both Met Office HQ and coalition partner forecast models to assess their quality and any inconsistencies. Output from the forecast models was forwarded to Met Office Mobile Met Unit (MMU) teams (an RAF Sponsored Reserve unit) deployed to the front line, and to a Met Office team in a prototype joint Environmental Fusion Centre supporting the Permanent Joint Headquarters (PJHQ) at Northwood. The Centre used this guidance to provide a UK view to the US Air Force Operational Weather Squadron in South Carolina, which produced a joint operational area forecast to meet the coalition aim of *'one theatre, one forecast'*.

Severe sandstorms over the region on 25-27 March were caused by an active low pressure area which was identified four to five days in advance and factored into operational planning based on UK forecast models. As the event approached, the higher resolution models were able to add more precision and accuracy and to address tactical and operational needs as well as planning. Overall the quality of advice from the coalition forecasts was excellent, and no significant weather event went unannounced to commanders.

Sandstorms obscuring a communications enclosure

The Mobile Met Unit teams deployed mainly with operational air squadrons, in particular those operating fast jets which were vulnerable to rapidly changing weather conditions. They used the information and guidance supplied to provide operational and mission specific briefings direct to planners and aircrew. Deployed RN forecasters provided advice to the National Contingent Commander and the Maritime Component Commander, as well as to many individual RN ships.

Additionally, specialist advice was provided to the Defence NBC Centre and to PJHQ for onward transmission to theatre. This advice covered both the possible movement of plumes from both actual and potential oil fires (which were a prominent feature of the 1991 Gulf Conflict) and from possible chemical attack. Using specific Met Office dispersion modelling software, guidance was provided to theatre so that forces were able to make informed tactical decisions.



Plume Dispersion Model (inset) with corresponding satellite imagery

CHAPTER 9 – PEOPLE

Key Lessons

- The performance of UK Servicemen and women in meeting the many and wide-ranging challenges they faced in Iraq was exceptional. This reflects the high quality of their training, the depth and diversity of their experience, and their personal courage, skill and dedication. It is of paramount importance that we continue to invest in the time, care and resources to recruit, train and retain them.

Welfare

- The Operational Welfare Package worked well. Provision of a welfare package is fundamental to the maintenance of morale and operational capability, but must be balanced with the management of Service personnel's expectations in order to reflect what can sensibly, safely and securely be made available in the early stages of an operation, particularly during war-fighting.
- Policy and procedures for informing next of kin and casualty reporting need to be timely and sympathetic to the needs of the family. A review of bereavement procedures is underway to identify those areas where a modern, better, and more harmonised approach can be implemented.

Reserves

- UK reservists showed the highest quality and commitment, and their value in all phases of an operation has again been demonstrated. The required numbers were mobilised for the needs of this operation.
- Call-out notice aspirations were met for the second and third tranches of Reserves. The Department will nonetheless review mobilisation processes, including call-out notice and readiness state definitions.
- The support of employers is invaluable and much appreciated. The momentum of the Supporting Britain's Reservists and Employers campaign needs to be maintained in order to retain employer support, including for subsequent deployments to Iraq.

Training

- UK forces' excellent individual command and leadership training was clearly demonstrated during the Iraq operation. Training nonetheless needs to be reviewed to keep pace with the rapidly evolving demands of modern warfare.
- Experience gained by the RAF through enforcing the no-fly zones with the US Air Force over Iraq was invaluable. Suitable training opportunities will be required in future to maintain the momentum of coalition integration.
- The operation confirmed the benefit of expeditionary exercises in demanding environments, such as Exercise SAIF SAREEA II in Oman, where most aspects of expeditionary operations can be comprehensively tested.
- In order to maintain the UK's capacity for expeditionary operations and power projection, collective training will be required for high readiness, support and enabling forces, based on the scenarios in which they are likely to fight, including operations in arduous environments.

- Modern training needs to strike a sensible balance between 'virtual' and reality training in order to maintain the ability to fight.

Health and Medical Issues

- Despite longstanding problems of undermanning in the Defence Medical Services, the provision of medical care throughout the operation was very successful.
- The time required for procurement and preparation of medical equipment and stocks needs to be recognised when undertaking operational medical planning.
- Bringing immunisation against anthrax into line with routine public health immunisation programmes may help to improve uptake further.

9.1 The UK's Armed Forces are respected throughout the world for their professionalism, discipline and resourcefulness. During the operation in Iraq, they have again shown the resilience, commitment and courage that are fundamental to the success they have achieved on this and other operations in recent years. In the course of the operation, they have drawn on their excellent training and considerable experience of peace support operations to meet the many and diverse challenges that have confronted them. They can be justifiably proud of their achievements.

Welfare

Operational Welfare Support

9.2 It has long been recognised that provision of satisfactory welfare support is linked to the maintenance of morale and is therefore key to the achievement of operational capability. Initial implementation of operational welfare provision for operations in the Gulf worked well and has evolved smoothly into the welfare provision for the sustainment phase of the operation.

9.3 The Operational Welfare Package in its present form was introduced on a tri-Service basis in 2001 and used with increasing success in Kosovo, Sierra Leone, and Afghanistan, and on SAIF SAREEA II and other exercises and deployments. It replaced the purely financial element of Local Overseas Allowance and, for this operation, included free telephone calls (20 minutes per individual per week), e-mail and internet access, 'blueys' (airmail letters) and 'e-blueys', TV and radio, books and newspapers, Combined Services Entertainment shows and a variety of recreational facilities. Whilst these measures were widely welcomed, a review of the package with a number of proposed enhancements is under way. The aim of the review is to ensure that, wherever possible, all forces - especially those deployed early to theatre - receive appropriate and timely levels of provision.

9.4 It was decided in conjunction with the Royal Mail Group to provide a free postal service to theatre for packets up to 2kg for family and close friends of personnel serving in the Gulf. This service was well received, initially doubling the volume of mail dispatched to theatre to around 20 tons daily, at a cost of some £1.5m per month (the volume has now settled at about three tons per day). The Royal Mail Group's decision to waive the costs for packets delivered to the BFPO depot in UK was withdrawn in the middle of July with the costs subsequently transferring to MOD. The service will continue to cover the Christmas period.

Another consignment of letters from families and frends

9.5 Operational welfare provision continuously evolves to take account of the unique nature and circumstances of each deployment, based on the principles enshrined in the Department's review of operational welfare in 1999. This evolution is often conducted under the glare of the media, whose reporting of anecdote can create public pressure for reactive change. Levels of expectation are increasing and there is continued pressure from Service personnel to expand and improve facilities. Such expectations need to be managed to reflect what can sensibly, safely and securely be made available in the early stages of an operation, particularly in a war-fighting theatre.

Support to Families

9.6 Service families also have increasing expectations of entitlements and levels of support. As a new initiative, units were given a sum of £1 per week per individual deployed, to be used collectively for communications with and support to families back at the home base. The initiative was very favourably received. Early results from a survey undertaken by the Army Families' Federation (AFF) suggest that communication between families and Service personnel was good, but that families wanted more regular information on what was happening from the military unit. Respondents also requested more opportunity to contact other families in the same position. Feedback from RAF families indicates they hold similar views. Further means of providing information to families will be considered.

9.7 The families of reservists need particular consideration, as they may have had little or no contact with the Services and may not understand Service structures, administrative procedures, roles or jargon. Such families knew whom to contact, but the AFF survey showed that they still found it much more difficult than Regular Army families to find the information and answers they wanted. This will be borne in mind in considering how best to improve the support they need.

Life Insurance

9.8 Service and civilian personnel are finding it increasingly difficult to secure adequate life insurance that covers them comprehensively during conflict without exclusions. Specific exclusions often include WMD fatalities. Some specialist personnel (such as aircrew, parachutists and bomb disposal experts, who are required to pay extra premiums against particular Service risks) receive assistance from public funds towards the extra costs incurred. However, there is a need to ensure that all Service personnel and civilians being deployed have access to life insurance schemes that do not discriminate against them and cover adequately all likely combat risks.

Bereavement

9.9 The Armed Forces have suffered 53 fatalities in the Gulf, 33 of which occurred during decisive combat operations (up to 1 May). 20 Service personnel have lost their lives in the subsequent post-conflict phase. The nation's deepest sympathy goes to the families and friends of all who lost their lives.

9.10 When a Serviceman died in theatre, initially only the broadest information on such incidents was released until the identities of casualties were confirmed and next of kin informed. However, this resulted in widespread concern among many other families whose relatives might have been involved. The policy was therefore reviewed during the operation to allow the earliest possible release of more specific information on an incident, thus reducing the number of families affected.

9.11 Casualty reporting procedures also need to take account of the increased speed of media and private communications, in order to address the needs and sensitivities of bereaved families given the inevitable media and public demand for rapid information. It was difficult to ensure that families' wishes were respected to avoid media intrusion. Some aspects of our support to bereaved families attracted intense media attention, with claims of insensitivity on a small number

of occasions. A comprehensive review of bereavement procedures has been conducted to address these and other related issues raised by bereaved families. The review has resulted in harmonised and simplified tri-Service procedures that are more sympathetic to the needs of the bereaved family.

9.12 Welfare support to bereaved families is very important and is frequently reviewed. An extension of widows' benefits to unmarried partners of Service personnel was announced in September 2003. In order to ensure that these benefits were available during the Iraq campaign, an *ex gratia* arrangement was introduced in anticipation of this change for deaths relating to conflict. Six awards arising from the operation have been made.

Augmentation

9.13 Augmentation is the temporary re-distribution of individuals - whether regular forces, reservists or civilians - to enhance the manning of headquarters and other areas of critical importance to an operation. It is a crucial element of force generation and was much utilised, particularly during the deployment and combat phases of the Iraq operation. Augmentees also bring with them the perspective of their donating organisation, helping to build close links between different headquarters. For example, teams from the three front-line commands were embedded into or collocated with the operational planning staff at the Permanent Joint Headquarters, and provided valuable support to these organisations.

9.14 There was also a consistently high demand for good quality UK staff officers to support US and coalition structures. The importance of liaison officers working within key US headquarters was noted in Chapter 7. Following the conflict, the Coalition Provisional Authority was established in Iraq with responsibility for the temporary administration and reconstruction of the country. British military and civilian officials have filled positions in these organisations and liaison posts in US military structures where they could provide expertise. Inevitably augmentation often involves short-notice requirements, and mechanisms need to take this into account in prioritising postings and preparing individuals for their respective appointments. Augmentation policy is being updated to reflect the experience of this operation.

Civil Servants in Support

9.15 A large number of civil servants from the Ministry of Defence and other Government Departments directly supported the Armed Forces during the operation, as described in *First Reflections*. Many provided a critical contribution within their normal jobs; others moved either to theatre or to help provide round-the-clock manning for operational headquarters and MOD's Defence Crisis Management Organisation in the UK. The ability rapidly to augment these structures during crises is a major part of the civilian component of preparedness for operations. While the quality of augmentees was high, it took time to move suitable people from existing jobs and to bring them up to speed in their roles, given the reliance on volunteers. The Department is considering how augmentation could be made more effective. This would involve better training, earlier preparation and an improved volunteer civilian skills database. Civil servants being deployed into theatre need to be well briefed on what to expect, and a greater number need to be sent early to deal with contractual and financial issues at the start of an operation.

MOD civil servants working with the UK logistic headquarters at Umm Qasr

Reserves

9.16 The Government has planned and structured the Armed Forces on the basis that any major war-fighting operation would draw on support from the Reserve Forces. This is a prudent approach that allows the maintenance of full-time Armed Forces in no greater strength than is needed for normal peacetime activity and for meeting a limited range of contingencies. The more flexible use of reservists also gives MOD the opportunity to harness skills that are appropriate for operations, but are not needed in that number on a regular or frequent basis in peacetime, and therefore are not readily found within the Regular Armed Forces. The Reserve Forces Act 1996 worked well, though we are reviewing some of its regulations, particularly those relating to financial and disciplinary issues, in the light of our experience during the operation.

9.17 This operation involved the largest compulsory call-out of Reserve forces since the 1956 Suez Crisis. Over 8000 reservists were called out for the deployment and campaign phases, with over 5200 taken into service. Following further incremental call-outs in April and August 2003, an additional 3300 reservists were taken into service for roulement purposes, and a further requirement for some 1100 will be met by mobilisations in January. Further call-outs may be made for future roulements. Most reservists were drawn from the Volunteer Reserve Forces together with a smaller number from Army and RAF Regular Reserves, and Sponsored Reserves such as those manning our roll-on-roll-off ferries and employed in the Mobile Meteorological Unit. Their successful employment demonstrated that the vision in the Strategic Defence Review for more integrated, relevant and useable Reserve forces to provide additional capability in time of crisis has been realised. And in addition to the military skills in which reservists are trained, the professional skills and experience which many reservists brought from their civilian life proved indispensable to the post-combat reconstruction process. Examples include merchant bankers running Coalition Provisional Authority finances, pylon erectors, water plant workers and telephone engineers. Many reservists also possess very useful broader project management skills.

9.18 However, the utility of the Reserves will need to evolve further, to meet the need for compressed planning and preparation time-scales and a more rapid transition to expeditionary war-fighting. In future, Reserve forces may be required for a greater number of more frequent, short-notice operations. There is a balance to be struck between using Reserves to fill shortages in regular manpower (particularly specialist capabilities) for this purpose and in formed units providing key enabling capabilities. There is a risk that using reservists solely to plug shortfalls will affect recruitment, although nearly 10% of reservists demobilised after serving during the operation have expressed an interest in joining the regular forces or undertaking further full-time service.

9.19 The mobilisation of Reserves highlighted a number of issues. Some Reserve units that provide key specialist enabler capabilities where Regular capability is insufficient (e.g. movements and intelligence) were required during the early stages of the operation, and had to be called out more quickly than was desirable. Many specialist manning gaps within Regular units could only be filled by Reserves once their mobilisation had been authorised and their pre-deployment training completed, which adversely affected the pre-deployment preparation for these units. Furthermore, in some specialisations, Reserve force mobilisation afforded only a 'one-shot' capability: roulement for an enduring commitment remains a challenge.

9.20 The aspiration was to give reservists 14 days' notice of mobilisation, but for this operation, mobilisation time was clearly very short. Operational requirements meant that some 'early enablers' had to be called out at shorter notice. For example, the first tranche of the TA Port Regiment called up were given four to seven days' notice, as they were required to operate Marchwood Military Port, releasing regulars to deploy to receive shipping in theatre. Where possible, this was achieved by negotiation: for example, of the 57 Royal Naval Reserve Amphibious Warfare officers available, 14 were able to meet a three-day timescale (to sail with the Amphibious Task Group), and 12 were selected. Nevertheless, for the bulk of the call-out, 14 days was the intended notice time. That this was not always achieved was often due to reservists'

absence from home, postal delays, and how soon the reservist could tell his or her employer.

9.21 It remains important to ensure that the volunteer ethos of the reservist and the goodwill of both families and employers are not prejudiced by mobilisation issues. The desired notice has therefore been revised to 21 days, and this aspiration has been achieved in subsequent mobilisations for Iraq. Inevitably, however, operational requirements may still require shorter notice periods on occasion.

9.22 The support of reservists' employers is crucial and much appreciated. The Supporting Britain's Reservists and Employers (SaBRE) organisation played a key role during the operation, dealing with some 30 employers' enquiries per day during January and February 2003. This increased during the roulement phase, possibly because the continuing need for reservists was not widely understood. The Service Adjudication Officers took note of employers' needs, granting exemptions where operational conditions allowed within the terms of the relevant legislation. MOD has initiated a study to measure the degree of employer support for the mobilisation of Reserves.

9.23 Following the operation, MOD is adjusting the arrangements for the higher management of Reserves. This includes the reorganisation of the Directorate of Reserve Forces and Cadets under the direct command of the Vice-Chief of the Defence Staff.

Prisoners of War

9.24 The UK retained responsibility as Detaining Power for all UK-captured Prisoners of War (POWs) and for all other people captured and detained by UK forces - a total of 2628 up to the end of August. The handling of POWs is a complex and sensitive area that requires considerable preparation in the initial planning phase of an operation. Specific manpower assets and materiel resources need to be identified to undertake guarding and other tasks during the operation, and handling arrangements need to be discussed with the International Committee of the Red Cross (ICRC). A central MOD focal point for development and co-ordination of POW policy would help improve planning and liaison. A Memorandum of Understanding between the US, UK and Australia was negotiated to set out agreed joint procedures in advance. In the event, considerably fewer POWs were taken than had been predicted.

9.25 POW guarding responsibilities were split between the coalition partners: the UK took the lead in guarding during the opening phase of the campaign, until large US-run camps had been set up within Iraq. The UK then fulfilled its responsibilities using liaison officers, and working closely with the ICRC. POWs were detained in well-managed camps and were well treated. Interpreters deployed at the POW facilities eased the passage of information and reduced the risk of frustration and misunderstanding. However, personal possessions often arrived separately from their owners and (contrary to instruction) without labels, resulting in POWs being released without their personal effects. A small number of allegations were made of misconduct against POWs by individual UK Service personnel, which are currently under formal investigation.

9.26 The Geneva Convention seeks to protect POWs from public curiosity by not allowing the publication of photos from which they could be identified. The UK took rapid action in response to early transgressions, but not all of the media followed the practice of blurring faces. Military commanders will continue to do what they can to remind the media of the law, and ensure that cameras are not allowed into POW facilities.

9.27 Overall, however, the British Red Cross observed that "the MOD's commitment to respect international humanitarian law during the recent armed conflict in Iraq, both in words and in practice, was very positive", and that "it was evident that the MOD wished to help ensure that the UK conducted its operations entirely in accordance with the Geneva Conventions and any other relevant laws".

Training

9.28 The short time available for deployment of forces before operations began did not allow for a long period of training in theatre. That UK forces can perform successfully and confidently with minimal in-theatre training demonstrates the value of having a training foundation that generates well-prepared and trained forces, and the importance of the maxim "train as you mean to fight" – i.e. that routine training should prepare units for the conditions and experience of warfighting. Most deployed land units and formations were at a high state of training, had trained in the UK beforehand, and undertook some desert training. At the individual level, UK Service personnel had been well trained in engendering fighting spirit, overcoming difficulties and addressing complex tactical problems. This was demonstrated in their ability to assume responsibility and display considerable initiative throughout the operation. Training must continue to be demanding and realistic.

Operational Experience

9.29 Of particular value was the considerable local operational experience gained by the Royal Navy and Royal Air Force since the 1991 Gulf Conflict, working with US forces in the region to enforce UN sanctions and patrol the no-fly zones. Indeed, with the no-fly zone operations now having ended with the removal of Saddam Hussein's regime, it will be a considerable challenge to find suitable training opportunities to maintain the momentum of integrated coalition activity for future aircrew and support personnel. More generally, the recent employment of UK forces on a variety of combat and peace support operations and exercises around the world clearly helped UK personnel prepare and adjust to the needs of an expeditionary campaign.

9.30 The need for training to simulate the conditions of operations was noted above. Many soldiers and marines observed that it took time to adjust to the shock, percussion effects, disorientation, smells and sounds associated with combat. Training constraints imposed by safety regulations, particularly in the urban environment, contribute to this difficulty. This was overcome in the Gulf by strong junior leadership and initiative during the early stages of land fighting. As training becomes more dependent on simulation and virtual environments, it will be essential to replicate the hard edge of battle as far as possible.

Joint Exercises

9.31 Operational experience is complemented by a variety of training methods. Two major exercises proved of especial benefit to the Iraq campaign, by bringing together and testing our personnel, logistics, equipment and procedures in operational scenarios. The UK's participation in the large-scale Exercise SAIF SAREEA II in Oman in 2001 provided our joint forces with valuable training experience and exposure to the practical difficulties associated with expeditionary operations in a very challenging environment. Lessons learned from this exercise also led to some significant equipment upgrades that resulted in the outstanding availability rates achieved in Iraq (see Chapter 5). However, large-scale exercises of this nature require considerable time and resources, and can occur only at four- or five-year intervals. An increased emphasis on joint training opportunities closer to home can supplement such exercises, serving to develop further effective co-ordination between the Services, and providing valuable training opportunities for joint commanders.

9.32 Shortly before the end of 2002, the UK participated in a long-planned US exercise, Exercise INTERNAL LOOK 02, run by the US Central Command. In practice, this also served for the US as a mission rehearsal for the Iraq operation, which was of course the contingency uppermost in planners' minds at the time. This not only allowed headquarters staff to practise and prepare for running a coalition operation with the US, but directly assisted the UK's ability to influence mission planning.

Cultural Knowledge and Language Training

9.33 The ability to communicate with the local Iraqi population was critical to the success of the operation, resulting in a requirement for large numbers of interpreters throughout. The Department will review the provision of interpreters for future operations. By recording the training which personnel (including Reserves) have undertaken in particular languages and cultures, good quality interpreters could be more easily sourced at short notice. This would enhance the UK's overall military capability in future operations.

Single Service Training

9.34 'All-arms training' involves combining training of armour, artillery, infantry, engineers and aviation. Elements of 3 Commando Brigade RM undertook an all-arms exercise with the US Marine Corps in the US in autumn 2002, while 1(UK) Armoured Division took part in similar exercises in Kuwait in April 2002 and the full programme of exercises with NATO's Allied Rapid Reaction Corps that year. Many soldiers have emphasised the value of this high intensity training, with the facilities at the British Army Training Unit Suffield in Canada receiving particular praise. With the UK's defence posture increasingly based around expeditionary operations and power projection, collective training for high readiness, support and enabling forces will continue to play a vital role, based on the scenarios in which they are likely to fight, including the urban environment.

9.35 Land forces required more in-theatre training than their maritime and air counterparts owing to the environment. In the Gulf, this focused on command and staff training and field training – the latter essentially involving a live-firing exercise on the Udairi desert ranges in Kuwait. Limited conversion training was also conducted with new equipment procured specifically for the operation, such as NBC force protection equipment. Land training is built around training for high intensity war-fighting operations; however, the training emphasis for forces due to deploy to Iraq has now shifted to focus more on peace support activities. The ability of UK forces to move rapidly from high-intensity combat to stabilisation operations was much admired. It is a vital skill in campaigns such as in Iraq where peace support/internal security operations and humanitarian assistance need to be conducted concurrently with warfighting.

9.36 Maritime personnel prepared through a combination of traditional pre-deployment training in home waters and the recently introduced Flag Officer Sea Training Mobile Training teams. These teams provided training packages specifically tailored to the particular theatre for each ship, including Royal Fleet Auxiliary vessels, while they were en route. Amphibious forces integrated with their US counterparts in the Gulf; their training included full mission rehearsals in theatre.

9.37 Air operations were facilitated by the close professional relationship that has developed over many years between the RAF and the USAF, in particular through training and operating together in the Gulf region, the no-fly zones over Iraq and operations in Afghanistan. Personnel undertook a variety of pre-deployment training for operations both at home and overseas, and some units carried out a series of invaluable training deployments to the United States. The RAF is currently conducting a review of operational training to ensure that the enduring demands of training at home and overseas are met in the future.

9.38 Current training models are frequently reviewed to ensure they remain valid and relevant to evolving operations; the requirement to refine training on air/land integration identified in Chapter 6 is a good example. A balance will need to be established between the need to exercise with likely coalition partners and the need to exercise in particular parts of the world to foster relationships between the UK and potential host nations and allies.

A soldier dries her hair after having to wash it in the desert for the first time

Health and Medical Issues

9.39 Overall, the provision of in-theatre medical care throughout the operation was very successful. Medical provision followed the model of previous successful operations with a comprehensive hierarchy of medical facilities. These ranged from life-saving first aid on the battlefield, through emergency aid and support at medical outposts, to land-based field hospitals and the Primary Casualty Receiving Ship (RFA ARGUS) all capable of providing primary surgery. In addition, all troops receive training in battlefield first aid with a proportion receiving enhanced skills training. Thankfully, the number of UK casualties was low, but the treatment of Iraqi civilians and combatants resulted in hospital occupancy being regularly in excess of 60%.

9.40 The Iraq operation saw the largest deployment of Service medical resources since the 1991 Gulf Conflict, with the majority of the UK's deployable medical facilities and around 2800 medical personnel present in theatre. Details of the units deployed were provided in *First Reflections*[11]. Medical manning has historically suffered from major shortages, particularly in certain key clinical specialities, and a deployment on this scale was only achieved by using some 760 medical reservists from all three Services. The Reserve medical personnel not only provided support to Regular medical formations as individual reinforcements, but also deployed and manned a complete 200-bed field hospital. The close working relationship developed with the Department of Health in recent years helped minimise difficulties when NHS employers were required to release reservists. The combined deployment of Regular and Reserve medical personnel contributed to a most successful military campaign, where all medical objectives were achieved.

9.41 Medical equipment modules were not available off-the-shelf and needed to be constructed by the Medical Supplies Agency. With up to 200 different suppliers per module, procurement was a challenge. Because of the lead-time for the supply of some key items of medical equipment, some modules arrived in theatre incomplete. Deficiencies were rectified as soon as supplies became available from manufacturers. There were also shortfalls in some medical stocks, including ComboPens (self-injection antidotes for nerve agent poisoning) prior to deployment. However, procurement of additional stocks, redeployment of stocks from ships to ashore, and a programme that extended the shelf life of ComboPens ensured there were sufficient supplies to meet the requirement.

9.42 At the beginning of combat operations the take-up of immunisation against anthrax among deployed personnel was around 70% overall and higher in some front-line units. This represents a marked advance since the 1998 operations in the Gulf (when it was around 30% overall) but there is still room for improvement. The Department must continue efforts to make immunisation against anthrax routine; this should help to allay the concerns of some Service personnel, increase take-up to levels similar to those of public health immunisations, and improve readiness.

Medical Treatment of Civilians

9.43 The Defence Medical Services are configured to deliver medical support to coalition military personnel and POWs. This role dictates the clinical specialities and equipment modules required to deliver requisite levels of medical capability. However, as the campaign progressed, military medical facilities were approached by Iraqi civilians (including women and children) who requested treatment. The military medical personnel had neither the equipment nor the requisite clinical breadth to deal comprehensively with this diverse patient base. Policy on the medical treatment of the local civilian population is being reviewed, taking into account the positive impact that effective medical treatment of the local population through military means can have on 'hearts and minds'.

[11] *First Reflections:* Para 5.7, page 29

Post-Operational Health

9.44 The arrangements for post-operational healthcare for personnel returning from the Gulf were described in *First Reflections*[12]. These included research that MOD has commissioned from King's College, London into the physical and psychological health of personnel who deployed. The research involves the issue of questionnaires to a representative group of those who were deployed, seeking data on health status and exposures. The same questionnaire will be distributed to a control group who did not deploy to provide a comparison. Researchers have conducted interviews with over 60 personnel to collect data on any emerging concerns about exposures and health effects. The issues raised will be followed up in a major study due to commence early next year. However, to date, we are not aware of any unusual pattern of ill-health in returning personnel. A detailed paper on the health lessons identified since the 1991 Gulf Conflict, taking account of experience on recent operations in the Gulf, will be published in the New Year.

[12] *First Reflections:* Para 5.13, page 30

CHAPTER 10 – THE INFORMATION CAMPAIGN

Key Lessons

- An information campaign, to be successful, needs to start as early as possible and continue into the post-conflict phase of an operation.
- A counter-information strategy can enhance the effectiveness of the information campaign and should form an integral part of the campaign from the outset.
- Targeting of indigenous media infrastructure, where justified under international law, needs to take into account the respective needs of the information campaign and the overall military campaign.
- The requirement for interpreters for information operations needs to be included in the planning process and a mechanism established to produce the required numbers of high quality interpreters at short notice.
- Overall, the embedding of reporters with coalition forces resulted in accurate reporting of coalition operations. However, this effort should be matched by arrangements to address international and regional audiences.
- If a robust UK media operations capability is to be realised, specialist manpower, training and equipment shortfalls need to be addressed

Keeping Parliament and the Public Informed

10.1 Throughout the operation, Ministers sought to keep Parliament and the public informed of progress and of key events as they occurred, especially during the combat phase of the operation. Between 20 March and 14 April, Ministers made no fewer than nine statements to the House of Commons. On most days, the Parliamentary Under Secretary of State and Minister for Veterans Affairs, Dr Lewis Moonie, also posted a bullet-point update on the operation in the Library of the House. Ministers, usually supported by the Chief of the Defence Staff or a single Service Chief of Staff, also held eight press conferences during the same period. A further two press conferences were held in theatre by the UK National Contingent Commander, and Ministers gave three briefings to Lobby journalists. Since mid-April, Ministers have made a further ten Parliamentary statements on Iraq.

10.2 In a fast-moving operation, the challenge was always to provide as accurate and up-to-date information as possible. This was achieved to the best of MOD's ability, and while mistakes were sometimes made, this was due to the 'fog of war' rather than an attempt to mislead the media over the coalition's progress. It included an extensive range of facilities and briefings both in the UK and in the theatre of operations covering all aspects of the deployment and return of forces.

10.3 Following the announcement by the Defence Secretary on 20 January of the UK's substantial land deployment, a dedicated MOD website for the operation was created at http://www.operations.mod.uk/telic. This was designed to provide a wide range of information for members of the public and the media, including details of the units involved, extensive

photographic galleries, reference maps and background documents, including summary details of military activity and of UK fatalities. During the period of active combat operations, the site was updated on a 24 hours a day/seven days a week basis. By the end of April, it comprised some 110 pages and documents, with about 580 photographs and video clips. There were in excess of 827,000 recorded visits to the site during this period, with over 1,830,000 pages viewed[13]. The site has been maintained since the conclusion of active combat operations, and by the end of August had grown to 160 pages and documents, and over 750 images. 1.3 million visits had been recorded, with over 2.6 million pages viewed.

Aim of the Information Campaign

10.4 An information campaign is a cross-Government activity involving diplomatic, economic, political and humanitarian elements. MOD's contribution to the campaign comprises two principal elements: Information Operations and Media Operations. As described in *First Reflections*[14], the aim of the UK's information campaign was to influence the will of the Iraqi regime, the attitudes of its security forces and civilians as well as the regional audience, and to inform international opinion. It also sought to articulate and explain the Government's strategy to other audiences, including our allies and partners, and countries that were either non-aligned or opposed to UK policy on Iraq.

10.5 While co-ordination of information campaign activity across Government and the agencies was extremely good at the working level during the campaign phase, this declined during the early part of the post-conflict phase. This led to a dilution of its effectiveness and coherence, despite the importance of the contribution it can make to maintaining the consent of the Iraqi people. There is a requirement for a more permanent mechanism to establish overall ownership of and responsibilities for the information campaign. Co-ordination mechanisms with potential coalition partners should be reviewed in order to ensure the delivery of a consistent message.

Counter-Information

10.6 Counter-Information is the defence against hostile information (including its pre-emption), as well as the destruction of an opponent's credibility by exposing errors and lies. Counter-information was under-utilised by the coalition during the combat phase of the operation. For example, the extent of coalition forces' advance was not exploited to counter false claims from organisations such as the Iraqi Ministry of Information. While MOD addressed this to a certain extent, the operation highlighted the need to include counter-information as an essential cross-Government activity and an integral part of the whole information campaign.

10.7 In accordance with international law, media infrastructure in Iraq was only targeted if there was sufficient evidence that it was being used by the Iraqi regime for command and control purposes. However, as a consequence of such targeting, the coalition lost a means subsequently to transmit stabilising and calming messages to the Iraqi people, which made it difficult to combat the aggressive counter-information campaign by Iraq and sympathetic neighbouring countries. Decisions on attacks against media infrastructure whose use makes it a legitimate military target need to be finely judged and informed by the potentially competing demands of the information campaign and the coalition's overall military objectives.

Measurement of Effectiveness

10.8 Measurement of the success of an effects-based operation such as an information campaign is important, but difficult to achieve. In order to guide the continuing campaign, new forms of systematic assessment were developed, including the evaluation of the UK print media. The computer-based tools used have a wider application in processing data from a range of

[13] Website statistics tend to underestimate actual usage, not recording access via cache servers.
[14] *First Reflections:* Box page 18

sources to inform commanders at all levels. Separately, during the post-conflict phase, a number of opinion polls were taken in Multinational Division (South East), which provided valuable feedback on the mood and opinions of the Iraqi people on coalition activity.

The Royal Regiment of Fusiliers distributes emergency aid near Basrah

Interpreters

10.9 The ability to communicate is critical in helping UK forces to gain the trust and respect of the local population. Oral communication also underpins intelligence collection and all 'hearts and minds' activities. However, UK forces' conduct of information operations was constrained by the limited number of UK Arabic interpreters. The requirement for interpreters needs to be included in the planning process and a mechanism established to produce the required numbers of high quality interpreters at short notice.

Media Operations

10.10 As described in *First Reflections*[15], the availability of real-time media communications from the battlefield, 24-hour television coverage and the presence of thousands of reporters and commentators - not only in capital cities and headquarters on both sides of the campaign divide, but also embedded in front-line units - gave the world unprecedented access to events as they unfolded. Building on the experience gained in previous conflicts, coalition media operations were much improved compared to recent operations and the extensive resulting coverage was generally well informed and usually factually accurate.

10.11 Some 700 journalists were embedded with coalition forces, 153 of whom were assigned to UK units as war correspondents. Although these correspondents placed a burden on the hosting units, commercial analysis of the print output they produced during the combat phase shows that 90% of embedded correspondents' reporting was either positive or neutral, although their reporting inevitably lacked the broader context of the overall operation. The reporting of coalition successes was also a useful means to apply pressure on the Iraqi regime, particularly when the reporting exposed as propaganda the briefings delivered by the Iraqi Information Minister. As a result of their experience as war correspondents, many journalists acknowledge that they have a better understanding of the Armed Forces. The war correspondents were predominantly from UK organisations, and although their product was pooled, greater international and regional media representation amongst the embedded reporters, particularly from Arabic broadcasters, could have extended media coverage to other key audiences.

10.12 Military media operations personnel were needed in the coalition Press Information Centres in Qatar, Kuwait and Bahrain as well as in the Forward Press Information Centre with Headquarters 1(UK) Armoured Division. However, shortages of trained media operations personnel meant that most positions were filled by double-hatted Regular or Reserve personnel. This delayed the establishment of a robust media operations capability sufficiently early in theatre, at a time when the media were arriving in significant numbers. We need to address how to provide an early media capability in an era of high profile, high readiness expeditionary operations.

10.13 Media operations became more difficult during the transition from the combat phase to

[15] *First Reflections:* Box page 16

post-conflict operations, because many experienced media operations personnel returned to the UK and embedded reporters either left theatre or were unable to operate effectively because of the hazardous security situation. This loss of initiative made it difficult to satisfy media requirements and counter negative coverage effectively. Planning for similar operations in future should take into account, from the outset, media demands during the transition to the post-conflict phase.

The Secretary of State for Defence addresses the crew of HMS CHATHAM

CHAPTER 11 – POST-CONFLICT OPERATIONS

Key Lessons

- National planning for post-conflict operations, including planning on a contingency basis, must be given appropriate priority and legitimacy at an early stage. It may often be necessary to begin long before a decision is taken on military action. Planning should involve the early engagement of all likely participants within a co-ordinated framework. Proposals for a joint approach across Government to managing post-conflict operations are currently being developed.
- Although a range of post-conflict scenarios was considered, it was difficult to predict accurately the conditions in Iraq following the fall of Saddam Hussein, and the scale of the involvement required of the military in reconstruction issues was greater than had been anticipated.
- Successful planning and pre-positioning of aid helped to avert a humanitarian crisis.
- Delegating funding to commanders to undertake projects of relatively low cost, but quick in impact, was a highly successful means of enhancing UK forces' ability to make overt progress on infrastructure and related projects, and helped to develop the consent and build the trust of the Iraqi people, thereby improving levels of force protection.

Post-Conflict Planning

11.1 Detailed planning for the post-conflict phase took place in parallel with the contingency planning for combat operations. Indeed, the military campaign was designed specifically with the coalition's post-conflict objectives in mind: for example, offensive operations were carefully targeted to ensure they had the least possible impact on Iraq's civil infrastructure. However, in the run up to the launch of the operation, it was important to avoid giving the impression that conflict was inevitable, as we still hoped for a diplomatic solution to the crisis. Contingency planning for a post-conflict Iraq was particularly sensitive as it necessarily had to start from the assumption that a conflict would eventually take place. In consequence, involvement in the initial stages of this planning was restricted to a relatively small group within Whitehall. The Cabinet Office initially took the lead in co-ordinating work on post-conflict planning and reconstruction, but as the work grew this responsibility was increasingly transferred to the Foreign and Commonwealth Office. Post-conflict planning faced many complications as it was difficult accurately to predict what conditions would exist in post-Saddam Iraq. In particular, the degree to which Iraqi administrative structures would remain to provide a ready framework for continuity and the extent to which the international community would engage were unknown. It was only after the fall of the regime that the extent of Ba'ath party domination of nearly all aspects of the Iraq state and society became clear. The impact of the sudden collapse of the regime was enormous, with the removal not just of top officials, but the whole of senior and most of middle management. The sudden liberation of a population that had suffered under such a long-ruling and viciously repressive regime also led to outbreaks of anarchy, looting and crime. These effects significantly complicated the post-conflict task.

11.2 The UK's vision for the future of Iraq was described in Chapter 7 of *First Reflections*, along with initial planning for the post-conflict phase of the operation and the key achievements

of UK forces during the period to June 2003. The UK vision is for Iraq to be a stable, united and law-abiding state within its present borders, co-operating with the international community, no longer posing a threat to its neighbours or to international security, abiding by all its international obligations and providing effective and representative government for its own people.

Post-Conflict Operations

11.3 At the end of the combat phase of the operation, coalition forces occupied the key cities and towns in a country with an estimated population of some 24 million people, and a total land area of over 437,000 square kilometres. Prior to the conflict a major concern had been that conflict might precipitate a humanitarian crisis, possibly as a consequence of large-scale refugee flows or disruption to essential services such as water and food distribution. Coalition plans took close account of this concern. The UK Government consulted UN agencies, the US and others in preparing to deal with a range of possible humanitarian crises.

11.4 The Department for International Development (DFID) contributed £16.5 million towards the effort to pre-position medical and food supplies, shelter kits and other relief. This money also helped to establish logistical support systems, and enabled staff to deploy in readiness. These funds were largely channelled through UN agencies, non-governmental organisations (NGOs) and the International Red Cross and Red Crescent movement: as experts in crisis management, they were judged best placed to apply resources where they could have maximum benefit. This system worked well. The World Health Organisation, for example, pre-positioned enough emergency health kits to last a million people three months, and the International Federation of Red Cross and Red Crescent Societies likewise pre-positioned supplies for up to 300,000 potential refugees. The ICRC made preparations to treat 7,000 war wounded, provide safe drinking water for 3.1 million people and provide hospital feeding to 5,000 patients for one month. The UK Government made substantial financial contributions to all these preparations. DFID itself also pre-positioned supplies in the region. The Treasury also allocated £30 million to MOD for humanitarian aid and to meet the UK's obligations under the Geneva Convention during the conflict and immediate aftermath. DFID provided two humanitarian advisers to work alongside the UK military prior to and during the combat phase to advise on appropriate humanitarian interventions. A third adviser was deployed at the end of the combat phase.

11.5 In the event there was no humanitarian disaster. A combination of coalition preparedness and the sheer speed of the operation meant that a humanitarian crisis did not have time to develop; in most areas, for example, the fighting passed so rapidly that there simply was no time for significant refugee flows to become established. There was some disruption of essential services and UK forces were involved in the delivery of emergency supplies of water - and to a much lesser extent, food - early in the conflict. However these were short-term requirements and small in scale when viewed in the context of the size of Iraq.

11.6 Although a humanitarian crisis was avoided, coalition forces have faced major post-conflict challenges. The most immediate and visible was the period of looting that, in places, followed the defeat of Iraqi forces but in others, crucially, was concurrent with continuing combat. Looting was not unexpected, but the scale of the problem was greater than envisaged and particularly difficult for forces to address while still committed to combat operations.

11.7 Furthermore, Iraq had faced years of neglect under Saddam. Despite Iraq's oil wealth and relatively high levels of education, its people endured serious poverty. The population largely depended on food handouts; the agricultural sector operated far below capacity; almost a third of children in the centre and south suffered chronic malnutrition; and the under-five mortality rate was 131 per 1,000 live births. Chronic under-investment in essential services had also taken its toll on power and water distribution systems. More than half of Iraqis living in rural areas had no access to safe water, and deaths from diarrhoea and acute respiratory infections accounted for 70 per cent of child mortality. Hospitals, clinics, sanitation facilities and water treatment plants all suffered from chronic lack of maintenance.

11.8 Most aspects of government and administration had been centrally controlled from Baghdad. The almost wholesale collapse of the Iraqi administration presented coalition forces with a triple challenge of simultaneously securing, administering and rebuilding the country. The continued absence - for a variety of reasons including political concerns and the uncertain security environment - of a number of the normal participants in post-conflict reconstruction (various NGOs, development agencies, etc) meant that the military had to combine their primary role of providing security with reconstruction tasks. While this military involvement in reconstruction has been successful, it has placed a greater burden on them than would be ideal, and contributed to the need for force level adjustments.

11.9 Some £10 million was authorised by HM Treasury to fund relatively small 'Quick Impact Projects' (QIPs) in Iraq that would have a positive benefit on the force protection of the UK forces deployed. This funding was sought as a direct result of lessons learned from Afghanistan and elsewhere. To the end of October 2003 some 620 projects had been carried out or were being planned, totalling some £9.4 million. These included over 200 projects in the education sector, in schools, colleges and universities; over 50 projects in the health sector; and over 140 in the law and order field. With other projects improving water, sanitation and power provision, QIPs have had a positive and widespread local impact in helping to start security, education and health activities, thereby helping to gain the consent of the Iraqi people, and to increase security and normality in the UK area. The QIP funding scheme has also enabled the UK to be pro-active in addressing developing areas of concern and potential causes of discontent. We should look to employ similar arrangements in future operations.

Political Developments

11.10 There has been much progress on the political front, with considerable executive authority already transferred to Iraqis. The coalition plan is for a fully representative Iraqi Interim Authority to be established and progressively to assume more of the functions of government from the Coalition Provisional Authority (CPA) led by US Ambassador Paul Bremer. A timetable for drawing up a new constitution and future elections has now been agreed (see paragraph 11.19).

11.11 In April, a meeting in An Nasiriyah between representatives of exiled Iraqi groups and local and tribal leaders agreed a 13-point plan, a key element of which was to dissolve the Ba'ath Party and eliminate its effects on Iraqi society through a programme of 'de-Ba'athification'. Consistent with this, following dialogue with recognised Iraqi leaders of all faiths, the CPA launched a policy on security institutions that involved the dissolution of the Iraqi Ministry of Defence, Ministry of Military Industry, and all branches of the armed forces of the former regime, including the Republican Guard, the Special Republican Guard and the Security Services. New Iraqi armed forces were to be recruited and trained by coalition forces, to enable Iraq to meet its legitimate national security needs.

11.12 By mid-May, the CPA had established the Development Fund for Iraq. 95% of the proceeds from the sale of hydrocarbon products have been placed into this fund for the economic development and reconstruction of Iraq (the remaining 5% being paid as reparations to Kuwait for the 1991 Gulf Conflict).

11.13 The Coalition Provisional Authority (South) (CPA(S)) was established at the end of May to coordinate policy implementation within its four provinces: Al Basrah, Al Muthanna, Dhi Qar and Maysan (i.e. covering the same area as the current UK Area of Operations). A British diplomat, Sir Hilary Synnott, heads the organisation as Regional Coordinator. The authority is staffed by 37 civilian UK personnel drawn from across Government, 21 military personnel, and a number of international staff. Staffing will expand significantly over the coming months.

11.14 Further extensive CPA discussions took place with Iraqi leaders throughout June and July, both on reconstruction and humanitarian aid issues and on the constitution, powers and status of

an Iraqi Interim Authority as a step towards Iraqi self-government. A 25-member Iraqi Governing Council was appointed in July, comprising 13 Shia members, 11 Sunni (five Arabs, five Kurds, and a Turcoman) and 1 Christian. The Council's key roles are the appointment of interim ministers, the provision of advice to Ambassador Bremer and the appointment of commissions to consider issues for the future of Iraq. The Council elected a representative nine-member presidency, as a precursor to the appointment of interim Ministers, and a preparatory committee for the Iraq-wide constitutional process. At the local level, on the establishment of a Baghdad City Advisory Council on 7 July, over 80 cities and towns in Iraq had a representative local council in place.

11.15 Opinion remained divided over the role the United Nations should play in Iraq. Nevertheless, UN agencies began to enter the country in increased numbers to support the delivery of humanitarian assistance and the reconstruction effort. Under UN Security Council Resolution 1483, a Special Representative of the Secretary-General was appointed to work with the CPA and the Iraqi people to restore local and national institutions throughout Iraq. This post was filled by Sergio Vieira de Mello, who arrived in Iraq in late May. In July, a UN Assistance Mission for Iraq was created to co-ordinate and control the work of the UN Agencies operating in Iraq. By then, 11 main UN agencies were involved in efforts to assist the Iraqi people.

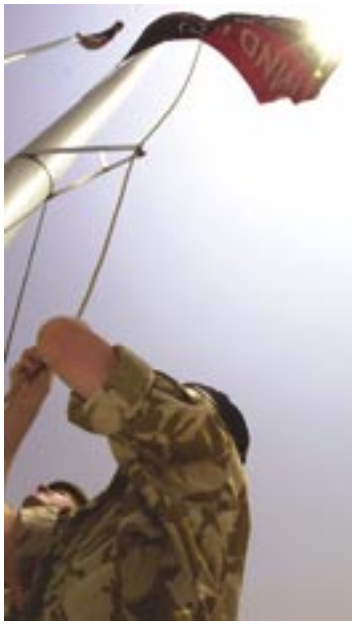
11.16 On 16 October, the United Nations Security Council unanimously adopted a new resolution, UNSCR 1511, outlining the roles of the United Nations, the CPA and the Iraqi Governing Council in international efforts to bring peace and stability to Iraq. The resolution, sponsored by Cameroon, Spain, the United Kingdom and the United States, provided a mandate for a multinational force under unified command and reaffirmed the UN's support for the work of the Governing Council. It noted that the 25-member Council and its ministers "are the principal bodies of the Iraqi interim administration, which…embodies the sovereignty of the State of Iraq during the transitional period until an internationally recognised, representative government is established and assumes the responsibilities of the [Coalition Provisional] Authority." The text also called on the UN to strengthen its vital role in Iraq, including by providing humanitarian relief and advancing efforts to restore and establish national and local institutions for representative government.

11.17 A Donor Conference on Iraq was held on 23 and 24 October in Madrid, opened by Kofi Annan and led by Iraqi interim Ministers and Governing Council members. Seventy-three countries attended, significantly broadening international support for Iraq's reconstruction, as well as 20 international organisations and 13 NGOs. More than $33 billion was pledged, excluding loans for export credit and technical help. These pledges included substantial grant resources for the early stages of Iraq's reconstruction, which should provide sufficient support until Iraq is able to generate more of its own revenue to meet its needs.

11.18 On the international stage, Iraq was represented by Iraqis at the UN General Assembly in September, at the Arab League Foreign Ministers' meeting on 9 September at UNESCO and OPEC meetings, and at the Organisation of Islamic Conference meeting in Kuala Lumpur on 16-17 October.

11.19 Discussions between the coalition and the Iraqi Governing Council on the future political process culminated on 15 November in the announcement of a timetable for the way ahead, leading to full elections for a new Iraqi government by the end of 2005. The milestones in the process are set out in the table below. A key date in this programme will be 1 July 2004, when the Iraqi Transitional Government assumes power and the US and the UK will cease to be occupying powers. From this point on, the multinational force will be in Iraq only at the invitation of the Transitional Government. The political process will be mirrored by a programme in which Iraqi forces will assume an ever greater responsibility for the security of Iraq. However, we anticipate that multinational forces will remain to provide security assistance for some time beyond the formation of a Transitional Government.

Political process – key milestones	
By Feb 04	Iraqi Governing Council to draft a new fundamental law enshrining human rights, freedom of speech and religious tolerance to apply until Iraq elects a new government by the end of 2005
By Mar 04	Coalition Provisional Authority and Iraqi Governing Council to agree security arrangements of coalition forces
By 1 Jun 04	Transitional Legislative Assembly to be established through a transparent and democratic process deriving from caucuses in each of Iraq's 18 governorates. Iraqi Governing Council to dissolve
By 1 Jul 04	Transitional Legislative Assembly to elect an executive body and appoint ministers as new Iraqi Transitional Government. Coalition Provisional Authority to complete handover of executive and legislative authority
By Mar 05	Elections held for membership of the Constitutional Convention, overseen by the Iraqi Transitional Government
By Jul 05	Draft of the new constitution to be circulated for public comment and debate
By Dec 05	A popular referendum to ratify Iraq's new constitution
By end 05	Full national elections for a new representative Iraqi government. Fundamental Law to expire and the Iraqi Transitional Government to dissolve



The flag of the new Multi-National Division (South East) is raised at its Basrah headquarters

Other Nations' Deployments

11.20 As reconstruction began in Iraq, the coalition sought to broaden the number of nations contributing troops to the operation. An outline structure was agreed for a Stabilisation Force for Iraq, under which UK forces would command what became known as the Multi-National Division South East (MND(SE)). Poland agreed to take the lead in the Centre-South sector, with NATO providing logistics, communications and force generation assistance. US forces held command in the north and in the capital, Baghdad. The UK secured contributions from nine other nations to its sector (see Annex C), and they began to deploy in early July. Other nations' deployments total some 5650 personnel, and reflect the international community's increased commitment to the future of Iraq.

Coalition Operations since June 2003

11.21 *First Reflections*[16] described the security situation in Iraq in the early months after the end of main combat operations. Around Baghdad and in the north, US forces encountered resistance from small bands of irregular forces loyal to Saddam Hussein, and launched a number of operations against subversive elements attempting to undermine stability. The UK sector in the south had been calmer, but the tragic incidents in Al Majar Al Kabir on 24 June had demonstrated the risks of localised violence. Amongst their other tasks, UK forces concentrated on anti-smuggling operations to prevent the theft of oil, and of copper wire from power lines, both of which were hampering efforts to restore power supplies.

[16] *First Reflections:* Paras 7.6-7.9 page 36

11.22 In July, attacks on US forces increased, particularly in the Baghdad area, pointing to a growing campaign by former regime elements. A significant coalition success was achieved on 22 July. Following an intelligence tip-off, elements of US 101 Airborne Division surrounded a villa in Mosul, which was secured after a firefight lasting some five hours. Two of the bodies recovered by US forces were subsequently confirmed as Saddam Hussein's sons Uday and Qusay. On the same day, US forces in Baghdad arrested the former commander of the Special Republican Guard. In the last two days of July, US forces completed a number of successful raids on former regime targets, one of which resulted in the capture of a number of Saddam Hussein's former bodyguards.

11.23 The UK Area of Operations included the major urban areas of Al Amarah, Al Qurnah, Basrah, Az Zubayr, and Umm Qasr. In early July, 1(UK) Armoured Division handed over responsibility to 3(UK) Division, under the planned roulement of UK forces. Simultaneous with the roulement of UK formations, the UK Area of Operations was increased to take in the provinces of Dhi Qar and Al Muthanna, in addition to Basrah and Maysan Provinces. The two additional provinces had formerly been within the US Area of Operations. This reflected the increased deployment of other nations' forces, and the perceived improvement in stability and normality across the UK Area of Operations.

11.24 By mid-July, UK forces totalled some 11,500 personnel in theatre, of which the land component accounted for some 9000. The UK maritime presence in theatre had by then reduced to five RN and RFA vessels, while the fixed-wing air component had reduced to eight Tornado GR4s in theatre, providing essential reconnaissance and attack capabilities in theatre (now further reduced to six), two VC10s, two Nimrod MR2s, two C-130Js and one HS125. The Joint Helicopter Force continued to support the ground forces, with 18 rotary-wing aircraft based at Basrah, covering the entire UK Area of Operations. At the end of July 2003 the security situation was relatively stable throughout most of the UK/MND(SE) Area of Operations.

Some of the Joint Helicopter Force detachment at Basrah airport

11.25 Personnel from the UK's Operational Training and Advisory Group travelled to Iraq in July to provide a training package for US forces and to learn from US experiences in Iraq. This was a useful exercise for both parties, with over 500 US Army commanders provided with training to run peace-keeping and counter-terrorist training at unit and sub-unit level.

11.26 Events since the end of July have been characterised by an increase in the number of attacks on coalition forces, sadly involving a number of fatalities. Attacks have also targeted the UN and other International Organisations, the Shia population, and those Iraqis assisting the coalition. Precise attribution for many of these attacks is difficult or impossible, but we assess that they are the work of members of the former regime's security forces, other elements who feel they have lost out as a result of the regime's downfall, and (to a lesser extent) fighters from outside Iraq who wish to see the multinational effort fail for their own ideological reasons. On 19 August, the UN headquarters in Baghdad was brutally attacked, leading to the tragic death of the UN's Special Representative, Sergio Vieira de Mello, and many others, whose sole purpose in Iraq was to help Iraq and the Iraqi people towards a better future. The attack led to a reduction in UN personnel in Iraq, as well as personnel from other humanitarian organisations. Some have now returned, and UN staffing is expected to return to full complement as soon as improved security allows, though this may be phased over a number of months. In addition, any signs of progress towards the coalition aims of returning Iraq to a secure, self-governing, democratic and peaceful nation, such as infrastructure improvements and the new Iraqi police force, have been targeted. The security situation in the UK area in south-eastern Iraq has generally been much quieter than other areas of the country. However, in an horrific attack on 12 November, suicide bombers

drove a vehicle-borne bomb at an Italian armed forces compound in An Nasiriyah. The explosion resulted in 26 deaths and 46 wounded, a mixture of Italian military and Italian and Iraqi civilians.

Joint patrol in Basrah by a Royal Military Policeman and an Iraqi policeman

11.27 Nevertheless, despite these setbacks, the coalition has been making good progress - more than is often realised - on security, the political process, provision of essential services, and reconstruction. Policing is of particular importance, as effective policing will be essential to creating and maintaining a democratic, stable and prosperous Iraq. Our goal is to enable Iraqis themselves to take responsibility for their own security. Police numbers in Iraq now stand at 62,000 and will progressively rise to 71,000 by the end of 2004. There are 12,500 Iraqi police in CPA(South), taking part in joint patrols with UK Royal Military Police. In November, the coalition began a training programme for 3000 police officers every eight weeks in a facility in Jordan. This training is being conducted by British and international police trainers and officers. The CPA(S) Regional Police Academy was re-established in mid-October, and police training is being carried out there by Danish police and UK military teams. A small UK military team, headed by a Brigadier, is supporting the training of the new Iraqi Army, while Royal Navy personnel are assisting with developing the Iraqi Coastal Defence Force and the RAF are assisting with the rebuilding of the Iraqi Air Force. The Iraqi Civil Defence Corps is being trained and expanded in order to take over guarding and patrolling duties, and a Facilities Protection Service is expanding to guard Iraq's key infrastructure. HM Customs and Excise will also be deploying training teams shortly to a number of entry points to the country in order to train Iraqi customs.

11.28 Following a review of force levels by the UK Divisional commander, it was decided in September to deploy additional forces to Iraq, both to increase security operations against criminals and to act in support of reconstruction and training efforts. This peak of activity had passed by November and the two additional infantry battalions deployed have been replaced with one. As the various lines of activity (political, reconstruction, security sector reform) proceed, we may again need in the future to make other temporary deployments or re-shape our forces in the region.

11.29 MOD responds to the changing circumstances in Iraq to ensure that our troops have the appropriate equipment to carry out their tasks. Since the end of the combat phase we have constructed, through UOR action, two tranches of Temporary Deployable Accommodation, sufficient to house 5250 troops in air-conditioned tentage. To date, we have committed over £80 million to this accommodation. The security and safety of our troops in Iraq is paramount and to this end we have put in place a range of sophisticated force protection measures including over 200 armoured (Land Rover-type) patrol vehicles and specialist counter-terrorist and surveillance equipment.

11.30 As part of our strategic plan for the reconstruction of Iraq, the coalition has completed over 13,000 reconstruction projects, large and small. The delivery of essential services is gradually improving. Electricity supply surpassed pre-war levels by early October, and projects are in hand in Baghdad, and elsewhere, to upgrade existing water treatment plants and build new ones to serve 11.5 million people. Food distribution systems have been restored, and a pipeline of supplies has been established to fill the food ration system well into next year. Nearly all 240 hospitals in Iraq are functioning, although some still face difficulties. With the help of UNICEF, over 22 million doses of vaccines have been provided, enough for 4.2 million children, and public health spending has increased to over 26 times its level under Saddam. In the field of education, over 1500 schools were rehabilitated in time for the new school year, and 70 million textbooks will have been printed by the end of December. Universities are also now operating. By November

2003, DFID had committed £207 million for reconstruction and humanitarian assistance in Iraq for Financial Year 2003/04. This included a £20 million contribution to the Essential Infrastructure Programme in the south-east of the country designed to provide swift improvements to power and fuel supply, and to water and sanitation systems.

An RAF NCO prepares abandoned Iraqi munitions for disposal

Unexploded Ordnance Clearance

11.31 Since the war-fighting phase of the operation, UK military Explosive Ordnance Disposal (EOD) teams have been working through a list of disposal tasks that include disposing of abandoned Iraqi munitions. This list will be cleared by the end of the year. The teams will then only be required to react to newly identified tasks to clear unexploded ordnance that affect the ability of the coalition forces to do their job. A concerted task is also being undertaken to reconnoitre and clear all main routes through the UK area of any stray ammunition. This work should reduce the overall volume of unexploded ordnance in the country and prevent it from affecting operations. An American contractor has been engaged to deal with the massive problem of the many Iraqi ammunition dumps around the UK Area of Operations. Although they are currently only setting up operations, they will be in a position to start clearing the over 50 ammunition storage sites within MND(SE) before the end of 2003. NGOs are also playing a valuable role by dealing with smaller tasks of a humanitarian nature. Some groups are carrying out training programmes to enable an indigenous ordnance disposal capability, using trained Iraqis, to be raised across the country. Four different NGO groups are currently working in the UK Area of Operations. UK and Danish teams have cleared over 600,000 unexploded munitions including a large number of mines and missiles.

Weapons of Mass Destruction

11.32 The Iraq Survey Group (ISG), a joint US/UK/Australian operation comprising 1200 to 1400 personnel, continues to lead the search for weapons of mass destruction (WMD) in Iraq. The UK makes a significant contribution to the Group (including providing the second-in-command), which comprises both military units and analytical expertise. The ISG's priority remains the discovery and elimination of WMD; however, the Group also collects and exploits information relating to terrorism, war crimes, prisoners of war and material relating to other suspect activity by the regime. The Group is able to draw on personnel from a wide range of civilian and military organisations, and its capabilities include the debriefing of human sources, and analysis of recovered documents and computer media.

11.33 Building on the information on the Iraqi programmes that was available prior to the war, the exploitation of material recovered in theatre, and the interviewing of Iraqi scientists, technicians and other personnel, the ISG is exploiting all possible leads relating to WMD. Presenting an interim progress report on 2 October, David Kay, Head of the ISG, stated that Iraq's WMD programmes "spanned more than two decades, involved thousands of people, billions of dollars, and were elaborately shielded by security and deception operations that continued even beyond the end of [the Iraq operation]". Notwithstanding the difficult conditions under which the ISG had to operate, it had discovered "dozens of WMD-related programme activities and significant amounts of equipment that Iraq concealed from the United Nations during the inspections that began in late 2002". These included:

- a clandestine network of laboratories within the Iraqi intelligence service suitable for chemical and biological weapons research;
- strains of biological organisms concealed in a scientist's home, one of which could be used to produce biological weapons;

- new research on agents applicable to biological warfare;
- testing of unmanned aerial vehicles well beyond UN limits;
- advanced design work for long-range missiles well outside UN limits and clandestine attempts to obtain ballistic missile technology and cruise missiles from North Korea.

11.34 The painstaking work of the ISG continues, including establishing the full extent of the methods used by the former Iraqi regime to conceal its WMD activity from the world. Gathering and collating evidence from all sources is expected to be a long and complex task. The UK will continue to provide all support possible to the search for, and destruction of, Iraqi WMD.

Conclusion

11.35 Iraq has shown the need to plan and organise in advance for the reconstruction of a failed state after major intervention. To be available in time, this will unavoidably often mean beginning work a long time ahead of a decision to undertake the military option (which, understandably, is often a step taken reluctantly at the last possible moment). It is important to understand why preparation for reconstruction does not imply that a decision for military action has been taken, any more than does military contingency planning.

CHAPTER 12 – DRAWDOWN, RECUPERATION AND COSTS

Key Lessons

- The production of a rehabilitation directive was a useful tool and its wider utility for future operations will be considered.
- The recuperation process is well underway through a graduated and cost-effective refurbishment and replacement programmme.
- Re-balancing of our support priorities has allowed the UK to maintain its forces at a readiness to meet its existing commitments and respond to emerging crises.

Personnel

12.1 UK forces began to withdraw from the Gulf theatre of operations in early May 2003, with the original 46,000 personnel reducing to some 10,500 over a period of around three months. To facilitate this drawdown of forces, PJHQ produced a rehabilitation directive to direct priorities and activities for unit rehabilitation, informing both continuing operations in Iraq and preparation for redeployment back home. This proved to be a useful tool and provided timely direction.

12.2 On their return, those who had served during the operation underwent a programme of recuperation including post-operational leave before they restarted training and other routine activity. A small proportion also had to focus on further planned operational deployments, both in Iraq and elsewhere. We are using the King's College Hospital, London study described in Chapter 9 to identify any post-operational medical problems.

RMP sergeant at re-opening of Basrah school where she led a refurbishment project

Recuperation

12.3 After the end of the major combat phase, significant quantities of equipment, vehicles and stocks were shipped back to the UK. A rigorous inspection programme then began to assess maintenance requirements after the equipment's exposure to harsh conditions during active service in the heat and dust of southern Iraq. An assessment of the quantities of stores and supplies consumed on the operation was also set in hand so that stockholdings could be restored to their pre-operational levels or in accordance with revised target levels. Initial inspections are for the most part now complete, and the recuperation process is well underway through a graduated and cost-effective refurbishment and replacement programme.

Costs of the Operation

12.4 Under long-standing Government arrangements, operational expenditure is met from the Reserve on the basis of net additional costs (in other words, excluding costs that would have been incurred anyway, such as Service salaries). This was the first major operation to be costed under full Resource Accounting and Budgeting principles, which created some additional challenges for finance staff.

12.5 Early in the operational planning process the requirement was identified for additional expenditure in a range of areas: Urgent Operational Requirement (UOR) equipment enhancements, increases in some logistic stock levels, pre-deployment training, contracts for infrastructure including satellite communications, and the charter of strategic air and sea lift (the UOR process is described in Chapter 2).

12.6 Close consultation between MOD and the Treasury on the resource requirements of the operation started early in the planning process and has continued on a regular basis. The Chancellor announced in his pre-Budget Report to Parliament in November 2002 a "£1 billion special reserve in 2002-03 to ensure that resources are available to meet overseas and defence needs in the fight against global terrorism". In March 2003 the Chancellor increased this figure to £3 billion, to take account of the military campaign and the need for immediate humanitarian assistance to the Iraqi people.

12.7 Our latest estimates suggest that the cost of equipping and deploying our forces to the Gulf up to the point of starting active operations was close to £700 million. The costs of the actual conflict include the large quantity of equipment (including guided weapons, munitions and bombs) and a huge range of other stores deployed to the Gulf.

12.8 The cost of the conflict (including combat operations up to 31 March 2003) was £847.2 million (this includes the £700 million above for equipping and deploying our forces). It will take time fully to assess the costs of stock consumption, and of damage and losses to equipment. However, initial estimates suggest that the cost of recuperation may be in the region of £650 million; this figure will be subject to revision as the inspection and maintenance programme continues. For Financial Year 2003-04 MOD intends to seek a further £1.2 billion in the Winter Supplementary Estimates to cover the likely costs of the operation. This will cover, primarily, the cost of post-conflict operations and associated UORs. It does not include the cost of recuperation of MOD's operational capability mentioned above. These sums are analysed in more detail in the table below.

	2002-03	**2003-04**
	£ million	
Service and civilian manpower costs	34.6	195.1
Accommodation (includes IT and communications)	83.6	77.2
Defence equipment, plant machinery and vehicles	160.6	167.5
Air and sea charter	89.6	108.9
Stock consumption	170.2	243.2
Depreciation and write-off of fixed assets	73.9	83.1
UORs and other capital items	217.7	219.9
Other costs (Op Welfare, currency gains/losses)	17.0	92.7
Total	**847.2**	**1187.6**

12.9 MOD was allocated £30 million for immediate humanitarian aid to meet our national obligations in the interim period before the security situation became sufficiently stabilised to

allow representatives from other Government Departments and civilian agencies to take on humanitarian responsibilities. The additional £10 million for Quick Impact Projects was discussed at paragraph 11.9. However, it is too early to estimate overall post-conflict costs at this stage.

Annexes

A. Updated chronology
B. List of forces deployed
C. Statistics

ANNEX A
CHRONOLOGY

Background

1990

6 Aug Following invasion of Kuwait, UN Security Council Resolution (UNSCR) 661 imposes sanctions on Iraq, subsequently extended by further resolutions. **29 Nov** UNSCR 678 authorises a coalition to use "all necessary means" to end the Iraqi occupation of Kuwait.

1991

16 Jan-28 Feb Iraqi forces ejected from Kuwait by coalition forces in first Gulf conflict. **6 Apr** Iraq accepts the cease-fire conditions in UNSCR 687, including a requirement to end all prohibited weapons programmes and to allow monitoring by the UN Special Commission inspection team (UNSCOM). **15 May** First on-site inspections begin.

1992

10 Aug UN "safe haven" is established in northern Iraq for the protection of the Kurdish population. **26 Aug** A no-fly zone is established over southern Iraq for the protection of the Shia Muslim population.

1995

14 Apr Creation of Oil for Food Programme by UNSCR 986, allowing revenue from oil sales supervised by the UN to be used for the purchase of humanitarian goods.

1998

16 Dec UNSCOM inspectors leave Iraq due to concern for safety of personnel and lack of Iraqi co-operation. **16-19 Dec** Operation Desert Fox: airstrikes against Iraqi weapons facilities.

1999

17 Dec UNMOVIC created as successor to UNSCOM. Iraq continues to prevent access by inspectors.

2002

12 Sep President Bush addresses the UN General Assembly saying Saddam Hussein has systematically and continually violated 16 UNSCRs over the past decade, and calls upon the UN to disarm Iraq of its weapons of mass destruction. **24 Sep** British Government publishes comprehensive dossier on Iraq's weapons of mass destruction. Prime Minister opens Parliamentary debate and acknowledges planning needs to take place. **8 Nov** UN Security Council unanimously adopts UNSCR 1441, declaring Iraq to be in material breach of past UNSCRs, creating a tougher UN weapons inspection regime and offering Baghdad a last chance to comply fully, immediately and unconditionally with its disarmament obligations, with "serious consequences" to follow if it did not do so. **13 Nov** Iraq indicates willingness to accept the return of weapons inspectors to the country under the terms of UNSCR 1441. **18 Nov** US approaches a number of countries, seeking support in the event that military action proves necessary. **25 Nov** House of Commons debates UNSCR 1441. Secretary of State for Defence announces that contingency planning is taking place for possible operations in Iraq. **27 Nov** Inspections resume in Iraq. **7 Dec** Iraq submits a 12,000 page declaration of its WMD programme to UN. **18 Dec** Secretary of State for Defence announces further contingency preparations, including approaching the shipping market to charter vessels. **19 Dec** Hans Blix's initial UNMOVIC report to the UN states that the Iraqi declaration falls some way short of what is required and may constitute a material breach. He subsequently says that the report contained no new information on the weapons' programmes revealed by UNSCOM.

Jan 2003

7 Jan Secretary of State for Defence announces the making of a call-out Order and intent to call out 1500 reservists. Augmentation of the Naval Task Group 2003 with 3 Commando Brigade is announced. **16 Jan** UNMOVIC discovers chemical weapon warheads in a relatively new bunker in Iraq. **20 Jan** Composition of the land package announced. **27 Jan** Drs Blix and El Baradei present a report on progress to UN Security Council, making clear the serious shortcomings in Iraq's co-operation with weapons inspections. **30 Jan** Secretary of State for Defence announces further call out of reservist to overall total of up to 6000.

Feb 2003

6 Feb Secretary of State for Defence announces the composition of the air package to be sent to the Gulf. Colin Powell briefs the UN Security Council on Iraq's failure to comply with UNSCR 1441.**14 Feb** Drs Blix and El Baradei present a further report on progress to UN Security Council. **27 Feb** UK, USA and Spain table a draft resolution at UN Security Council making clear that Iraq had failed under its obligations of UNSCR 1441.

Mar 2003

7 Mar Further inspectors report to UN. **14 Mar** France declared its intent to veto the draft resolution. **17 Mar** Following the Azores Summit, the Foreign Secretary announces the abandonment of the UN process. **18 Mar** President Bush issues an ultimatum for Saddam Hussein and sons to leave Iraq within 48 hours or be removed by force. House of Commons debate to authorise military action against Iraq: motion is passed by 412 votes to 149. Formal decision to commit UK forces, assuming that Saddam would fail to comply with the ultimatum, following debate. UNMOVIC/IAEA inspectors leave Iraq.

Combat Operations in Iraq

20 Mar Limited air strikes are launched on targets associated with the regime in Iraq. Ground campaign begins in the late evening with coalition forces including 40 and 42 Commando RM taking control of the Al Faw peninsula and US forces securing the Rumaylah oilfields. **21 Mar** Major air campaign begins at 1800. **22 Mar** US forces reach An Nasiriyah and secure several bridges over the Euphrates. **23 Mar** Royal Navy vessels begin sweeping the Khawr Abd Allah waterway for mines, to enable the port of Umm Qasr to be opened to shipping. **24 Mar** Basrah International airport under UK control. **25 Mar** 40 Commando engage Iraqi armoured brigade on Al Faw and destroy many Iraqi armoured vehicles. **26 Mar** Coalition forces target and destroy Ba'ath Party HQ in Basrah. **27 Mar** UK forces engage and destroy armoured vehicle convoy leaving Basrah. **28 Mar** RFA SIR GALAHAD arrives in Umm Qasr with humanitarian aid. **30 Mar** UK forces engage with enemy south of Basrah taking some high ranking POWs. **31 Mar** A school reopens in Rumaylah, and markets and hospitals open in Az Zubayr.

Apr 2003

1 Apr UK forces begin patrolling in Az Zubayr in berets. **2 Apr** US forces begin land engagement with Republican Guards around Baghdad. **4 Apr** Baghdad International airport seized by US forces. **5 Apr** US forces enter central Baghdad for the first time. **6 Apr** UK troops enter and remain in Basrah encountering little opposition. **7 Apr** Targeted bombing raid on building containing senior Iraqi leaders in Baghdad. **9 Apr** Iraq civilians tear down statue of Saddam Hussein in central Baghdad with the aid of US marines. **10 Apr** Kirkuk falls to Kurdish forces. **11 Apr** Commanders in Mosul sign a cease-fire. **13 Apr** Joint UK/Iraqi patrols begin in Basrah. **14 Apr** US forces enter Tikrit. **15 Apr** First conference on future of Iraq held in An Nasiriyah. **21 Apr** Lt Gen. Jay Garner, head of the Office of Reconstruction and Humanitarian Assistance, arrives in Baghdad with an advance party. **22 Apr** UK area of operations declared 'permissive' by the UN for humanitarian operations to commence.

May 2003

1 May President Bush declares major combat phase of operations over.

Post-Conflict Operations

5 May First British ambassador to Iraq for 12 years arrives in Baghdad. In Mosul delegates from different ethnic groups elect an interim council with 24 members. **8 May** Iraqi judicial system in Baghdad resumes under its pre-1969 legal code. **14 May** Umm Qasr port is handed over to local council administration. A mass grave dating back to the post-1991 uprising is found at Al Hillah, south of Baghdad. **15 May** Coalition Provisional Authority establishes the Development Fund for Iraq. **22 May** UN Security Council adopts Resolution 1483, affirming Iraq's territorial integrity, ensuring rapid delivery of humanitarian relief, winding down the Oil for Food Programme, lifting sanctions and endorsing an appropriate post-conflict administration for Iraq. A ship chartered by the World Food Programme arrives in Umm Qasr with a load of 14,000 tons of rice for humanitarian distribution. Secretary of State for Defence announces the call out of a further 1500 reservists. **23 May** Paul Bremer, US civil administrator of Iraq, orders the dissolution of the Iraqi Armed Forces, most of its security services and the entire military bureaucracy.

Jun 2003

8 Jun CPA introduces a trade liberalisation policy, suspending all tariffs and customs duties for goods and services entering or leaving Iraq until 31 December 2003. **9 Jun** Coalition forces begin operations to identify and defeat selected Ba'ath Party loyalists, terrorist organisations and criminal elements. **12 Jun** A Danish 450-strong infantry battalion, including a Lithuanian platoon, begins operating in the north of Basrah province. **15 Jun** Umm Qasr port opens to commercial freight shipping. **17 Jun** Ambassador Bremer opens a new Iraqi Judicial College and announces the creation of a Judicial Review Committee and the establishment of a Central Criminal Court. **22 Jun** Oil exports resume from Iraq. **24 Jun** In an incident in the town of Al Majar Al Kabir in the UK Area of Operations, six UK Royal Military Policemen are killed.

Jul 2003

2 Jul Interim Basrah Council is established. **7 Jul** A 37-member Baghdad City Advisory Council is launched. **12 Jul** HQ 3 (UK) Division formally takes control of the Multinational Division (South East). 1 (UK) Division begins departing theatre. **13 Jul** Iraqi Governing Council formed. **15 Jul** Italy takes control of Dhi Qar province from the US. Czech contingent of a company of Military Police and a Civil Military Co-operation Troop begins operations. **20 Jul** Recruitment and training commences for the new Iraqi Army. **22 Jul** Coalition forces in Mosul, during the course of a lengthy firefight, kill Uday and Qusay Hussein, sons of Saddam Hussein. **24 Jul** Norwegian engineer company begins operations in Basrah province. **27 Jul** A daily cargo and passenger train service begins from Umm Qasr to Mosul. **28 Jul** Iraqi Governing Council elects a nine-member presidency.

Aug 2003

1 Aug A Dutch battlegroup deploys under command of MND(SE). A Romanian mechanised battalion and Military Police company deploy in support of the Italian brigade. **8 Aug** Car bomb explodes outside the Jordanian Embassy in Baghdad, causing significant civilian casualties. **19 Aug** Explosion at the UN headquarters in Baghdad causes significant casualties, including the death of the UN Special Representative, Sergio Vieira de Mello. **21 Aug** General Ali Hasan al-Majid al Tikriti 'Chemical Ali' is captured. **29 Aug** Shia spiritual leader, Ayatollah Mohammed Bakr al Hakim, along with some 120 Shia worshippers, is killed by a car bomb outside a mosque in Najaf.

Sep 2003

3 Sep Iraqi Governing Council appoints 25 Ministers. **8 Sep** Secretary of State for Defence announces the deployment of new UK forces and equipment to boost force levels by around 1000. **22 Sep** Bomb explodes in a car park close to the UN HQ in Baghdad. **23 Sep** Members of Iraqi Governing Council take up Iraq's seat at the UN General Assembly. **25 Sep** Kofi Annan orders a further reduction of UN personnel in Iraq. **29 Sep** King Abdullah II of Jordan announces that Jordan will train 30,000 Iraqi police and troops in a series of eight-week courses.

Oct 2003

2 Oct Dr David Kay briefs the committees of Congress and the Senate on the Iraq Survey Group's interim report. **10 Oct** Service of Remembrance for operation held at St Paul's Cathedral. **12 Oct** Attempted suicide bombing at Baghdad Hotel, Baghdad: Six Iraqis killed. **14 Oct** Turkish Embassy in Baghdad is bombed: three Iraqis killed **15 Oct** New Iraqi dinar begins to replace the old currency **16 Oct** UN Security Council unanimously adopts Resolution 1551, outlining the role of the UN, the CPA and the Iraqi Governing Council in international efforts to bring peace and stability to Iraq. **23-24 Oct** $33 billion is committed to the redevelopment of Iraq at the Madrid Donors' Conference. **26 Oct** Attack on the Al-Rasheed hotel kills one US officer and seriously injures three, including an HM Treasury official. Deputy mayor of Baghdad is assassinated. **27 Oct** Simultaneous attacks on the HQ of the International Committee for the Red Cross and four police stations in Baghdad; suicide bomber strikes outside school in Falluja. **28 Oct** International Committee of the Red Cross begins withdrawal of all staff.

Nov 2003

12 Nov Attack on Italian base at An Nasiriyah kills 26 including 18 Italians and 8 Iraqis. **15 Nov** Iraqi Governing Council unveils a timetable for the transfer of sovereignty beginning in May 2004 with the formation of transitional assembly.

ANNEX B

OPERATIONS IN IRAQ - DEPLOYED FORCES
19 March-30 September

Royal Navy

Vessel	Type/Class	Deployment Dates	Aircraft/Other Notes
Amphibious Task Group			
HMS ARK ROYAL	Aircraft carrier (in helicopter carrier role)	11 Jan – 17 May	with 4 Sea King Mk 7 (849 NAS), 5 Chinook (18 Sqn RAF)
HMS OCEAN	Helicopter carrier	16 Jan – 28 May	with 10 Sea King Mk 4 (845 NAS), 6 Lynx AH7, 6 Gazelle AH1 (847 NAS)
HMS CHATHAM	Type 22 frigate	16 Jan – 8 Aug	with 2 Lynx (815 NAS)
HMS KENT	Type 23 frigate	5 Jun –	with 1 Lynx (815 NAS)
HMS MARLBOROUGH	Type 23 frigate	17 Jan – 8 Aug	with 1 Lynx (815 NAS)
HMS RICHMOND	Type 23 frigate	10 Feb – 1 Aug	with 1 Lynx (815 NAS)
HMS SUTHERLAND	Type 23 frigate	9 Jun – 3 Dec	with 1 Lynx (815 NAS)
HMS EDINBURGH	Type 42 destroyer	17 Jan – 28 May	with 1 Lynx (815 NAS)
HMS LIVERPOOL	Type 42 destroyer	17 Jan – 20 Apr	with 1 Lynx (815 NAS)
HMS YORK	Type 42 destroyer	17 Jan – 17 May	with 1 Lynx (815 NAS)
RFA SIR GALAHAD	Landing ship logistic	15 Jan – 5 Aug	
RFA SIR PERCIVALE	Landing ship logistic	15 Jan – 28 May	
RFA SIR TRISTRAM	Landing ship logistic	15 Jan – 28 May	
Submarines			
HMS SPLENDID	Swiftsure class	11 Jan – 17 Jul	nuclear-powered attack submarine
HMS TRIUMPH	Trafalgar class	2 Jun –	nuclear-powered attack submarine
HMS TURBULENT	Trafalgar class	20 Jun 02 – 16 Apr	nuclear-powered attack submarine
Mine Counter Measures Group			
RFA SIR BEDIVERE	Mine countermeasures (MCM) support ship	10 Sep – 28 May	
RFA SIR TRISTRAM	MCM support ship	28 May – 4 Aug	
HMS ROEBUCK	Hydrographic survey vessel	– 9 Jun	already in theatre
HMS BANGOR	Sandown class MCM vessel	10 Sep – 20 Jun	
HMS BLYTH	Sandown class MCM vessel	10 Sep – 22 May	
HMS BROCKLESBY	Hunt class MCM vessel	10 Sep – 22 May	
HMS SANDOWN	Sandown class MCM vessel	10 Sep – 20 Jun	
HMS GRIMSBY	Sandown class MCM vessel	20 Jan – 4 Aug	
HMS LEDBURY	Hunt class MCM vessel	20 Jan – 4 Aug	
HMS RAMSEY	Sandown class MCM vessel	24 Mar – 4 Aug	
HMS SHOREHAM	Sandown class MCM vessel	24 Mar – 4 Aug	
Fleet Diving Unit 2		10 May – 2 Aug	
Fleet Diving Unit 3		26 Nov – 12 May	

Fleet Support Unit 1		10 Sep – 24 Mar
Fleet Support Unit 2		10 Sep – 24 Mar

Afloat Support Group

RFA BAYLEAF	Fleet support tanker	– 12 Apr, 26 Sep –	returned to theatre
RFA BRAMBLELEAF	Fleet support tanker	6 Jan – 24 Oct	
RFA ORANGELEAF	Fleet support tanker	2 Feb – 28 May	
RFA FORT AUSTIN	Fleet support stores ship	24 Jan – 28 May	with 4 Sea King 6 (820 NAS)
RFA FORT ROSALIE	Fleet support stores ship	9 Feb – 28 May	
RFA FORT VICTORIA	Fleet support tanker and stores ship	18 Jan – 28 May	with 4 Merlin (814 NAS)
RFA GREY ROVER	Small fleet tanker	30 Jan – 20 Apr	retasked from South Atlantic
RFA ORANGELEAF	Fleet support tanker	2 Feb – 28 May	
RFA DILIGENCE	Forward repair ship	30 Jan – 11 Aug	
RFA ARGUS	Primary casualty receiving ship	15 Jan – 28 May	with 2 Sea King 6 (820 NAS)
RFA SEA CRUSADER	Strategic lift ro-ro	5 Feb – 26 May	

6 x chartered commercial shipping
4 x Strategic Sealift Capability (ro-ro ferries), manned by Sponsored Reserves

Headquarters and Command Afloat

Commander UK Maritime Forces
Commander Amphibious Task Group
Commander Mine Countermeasures Squadron One

Naval Air Squadrons (NAS)

embarked as shown under 'Aircraft' column above

814 Naval Air Squadron
815 Naval Air Squadron
820 Naval Air Squadron
845 Naval Air Squadron
846 Naval Air Squadron
847 Naval Air Squadron
849 Naval Air Squadron

Royal Naval Reserve

Reservists from the following Reserve Training Centres:
HMS CAMBRIA (Sully), HMS CALLIOPE (Newcastle/Gateshead), HMS CAROLINE (Belfast), HMS DALRIADA (Greenock/Glasgow), HMS EAGLET (Liverpool), HMS FERRET (Chicksands), HMS FLYING FOX (Bristol), HMS FORWARD (Birmingham), HMS KING ALFRED (Portsmouth), HMS PRESIDENT (London), HMS SCOTIA (Rosyth), HMS SHERWOOD (Nottingham), HMS VIVID (Plymouth), HMS WILDFIRE (Northwood), RNR Air Branch at HMS HERON (RNAS Yeovilton).

Royal Marines and Commando Forces

HQ 3 Commando Brigade Royal Marines
40 Commando Royal Marines
42 Commando Royal Marines
UK Landing Force Command Support Group
Commando Logistic Regiment Royal Marines
29 Commando Regiment Royal Artillery
539 Assault Squadron Royal Marines
9 Assault Squadron Royal Marines
59 Independent Commando Squadron Royal Engineers
131 Independent Commando Squadron Royal Engineers (Volunteers)

Elements of:
Commander UK Amphibious Forces
45 Commando Royal Marines
20 Commando Battery Royal Artillery
Fleet Protection Group Royal Marines
4 Assault Squadron Royal Marines
Royal Marines Band Service
Royal Marines Reserve City of London
Royal Marines Reserve Scotland
Royal Marines Reserve Bristol
Royal Marines Reserve Merseyside
Royal Marines Reserve Tyne

Army

units from which elements were deployed are shown in shown in italics

Headquarters

1 (UK) Armoured Division HQ and Signal Regiment
3 (UK) Division HQ and Signal Regiment
4 Armoured Brigade HQ and Signals Squadron
7 Armoured Brigade HQ and Signals Squadron
16 Air Assault Brigade HQ and Signals Squadron
19 Mechanised Brigade HQ and Signals Squadron
101 Logistic Brigade HQ and Signals Squadron
102 Logistic Brigade HQ and Signals Squadron

Royal Horse Artillery

3rd Regiment Royal Horse Artillery

Household Cavalry and Royal Armoured Corps

The Household Cavalry Regiment
1st The Queen's Dragoon Guards
The Royal Scots Dragoon Guards
The Light Dragoons
The Queen's Royal Lancers
1st Royal Tank Regiment (Joint NBC Regiment)
2nd Royal Tank Regiment
The Royal Yeomanry

Royal Regiment of Artillery

7 (Parachute) Regiment Royal Horse Artillery
5 Regiment Royal Artillery
12 Regiment Royal Artillery
26 Regiment Royal Artillery
32 Regiment Royal Artillery
40 Regiment Royal Artillery
47 Regiment Royal Artillery
395 Air Defence Troop (Volunteers)

Corps of Royal Engineers

12 (Air Support) Engineer Brigade HQ
23 Engineer Regiment
28 Engineer Regiment
32 Engineer Regiment
33 Engineer Regiment (Explosive Ordnance Disposal)
36 Engineer Regiment
38 Engineer Regiment
39 Engineer Regiment
42 Engineer Regiment (Geo)
529 Special Teams Royal Engineers (Air Support)
Military Works Force 62 and 63 Specialist Teams
Military Works Force 64 Specialist Team
Civil Affairs Group
131 Commando Squadron Royal Engineers (Volunteers)
412 Amphibious Troop Royal Engineers (Volunteers)

Royal Corps of Signals

2 Signal Regiment
10 Signal Regiment
14 Signal Regiment
21 Signal Regiment
30 Signal Regiment
Royal Signals System Support Team
Army Tactical Computer System Support Team

Foot Guards and Infantry

1st Battalion Irish Guards
1st Battalion The Royal Regiment of Fusiliers
1st Battalion The King's Regiment
1st Battalion The Light Infantry
2nd Battalion The Light Infantry
1st Battalion The King's Own Scottish Borderers
1st Battalion The Royal Irish Regiment
1st Battalion The Queen's Lancashire Regiment
1st Battalion The Duke of Wellington's Regiment
1st Battalion The Black Watch (Royal Highland Regiment)
1st Battalion The Parachute Regiment
3rd Battalion The Parachute Regiment
1st Battalion The Royal Green Jackets
The Tyne-Tees Regiment
The East of England Regiment
4th Battalion The Parachute Regiment (Volunteers)
Rangers Platoon (16 Air Assault Brigade Defence Platoon)

Army Air Corps

3 Regiment, Army Air Corps
4 Regiment, Army Air Corps

Royal Logistics Corps

1 General Support Regiment, Royal Logistics Corps
2 Close Support Regiment, Royal Logistics Corps
3 Close Support Regiment, Royal Logistics Corps
4 General Support Regiment, Royal Logistics Corps
6 Supply Regiment, Royal Logistics Corps
7 Transport Regiment, Royal Logistics Corps
8 Transport Regiment, Royal Logistics Corps
9 Supply Regiment, Royal Logistics Corps
10 Transport Regiment, Royal Logistics Corps
11 Explosive Ordnance Disposal Regiment, Royal Logistics Corps
13 Air Assault Support Regiment, Royal Logistics Corps
17 Port and Maritime Regiment, Royal Logistics Corps
23 Pioneer Regiment, Royal Logistics Corps
24 Regiment, Royal Logistics Corps
27 Transport Regiment, Royal Logistics Corps
29 Regiment, Royal Logistics Corps

47 Troop, Royal Logistics Corps
100 Pioneer Squadron
132 Aviation Supply Squadron, Royal Logistics Corps
165 Port and Maritime Regiment Royal Logistics Corps (Volunteers)
166 Supply Regiment Royal Logistics Corps (Volunteers)
446 Logistic Liaison Unit, US Armed Forces Assistant
496 Logistic Liaison Unit, Movement Support Group Royal Logistics Corps (Volunteers)
1 Postal Courier Group (Mill Hill)
101 Military Working Dogs

Royal Army Medical Corps

1 Close Support Medical Regiment
3 Close Support Medical Regiment
4 General Support Medical Regiment
5 General Support Medical Regiment
16 Close Support Medical Regiment
33 Field Hospital
34 Field Hospital
202 Field Hospital (Volunteers)
416 Armoured Field Ambulance Squadron

Royal Electrical and Mechanical Engineers

2nd Battalion, Royal Electrical and Mechanical Engineers
3rd Battalion, Royal Electrical and Mechanical Engineers
7 Air Assault Battalion, Royal Electrical and Mechanical Engineers

Royal Military Police

1 Regiment, Royal Military Police
3 Regiment, Royal Military Police
4 Regiment, Royal Military Police
5 Regiment, Royal Military Police
Platoon for 101 Provost Company Royal Military Police
156 Provost Company Royal Military Police

Intelligence Corps

1st Military Intelligence Brigade
1 Military Intelligence Battalion
2 Military Intelligence Battalion
3 Military Intelligence Battalion (Volunteers)
4 Military Intelligence Battalion
15 (United Kingdom) Psychological Operations Group

Defence Fire Service

Defence Fire Service (Army)

Digging in

Equipment

Ground combat systems

Challenger 2	116
Challenger Armoured Repair & Recovery Vehicle	26
Warrior (Infantry Carrying Vehicle)	140
Warrior (Command Vehicle)	26
Warrior (Recovery/Repair Vehicle)	46
Combat Vehicle Reconnaissance (Tracked) - Scimitar	66
Fuchs NBC vehicle	12

Artillery and Air Defence

AS90 self-propelled gun	36
Warrior (Observation Post)	24
Combat Vehicle Reconnaissance (Tracked) Striker (Swingfire)	12
105mm Light Gun	39
Rapier Launcher	3
Phoenix Launcher	4
Phoenix Air Vehicle	89

Helicopters

Gazelle	16
Lynx	18
Chinook	11
Puma	7
Sea King	10

Engineer equipment

Chieftain Armoured Vehicle Royal Engineer (Fascine Layer)	12
Chieftain Armoured Vehicle Launching Bridge	12
Shielder	10
Combat Engineer Tractor	24
M3 Pontoon Vehicle	30
BR90 Truck-borne Bridging Equipment	4

Transport and Movements

Demountable Rack Offloading & Pickup System (DROPS)	464
DROPS Trailer	149
Light Equipment Transporter (LET)	29
LET Trailer	24
Heavy Equipment Transporter (HET)	61
HET Trailer	60

Fuel Vehicles and Utility

Bulk Fuel	162
Multi-Wheeled Drive (Water)	7
Rough Terrain Container Handler	8
Container Handling Rough Terrain	15
Recovery Vehicle 6x6	93
Battlefield Ambulance	173

Royal Air Force

Squadron	Station	Aircraft/Other notes	Deployment dates
Strike aircraft			
1(F) Sqn	RAF Cottesmore	Harrier GR7	23 Feb – 6 May
II(AC) Sqn	RAF Marham	Tornado GR4/4A	19 Feb – 16 Apr, 30 Jun – 31 Jul
3(F) Sqn	RAF Cottesmore	Harrier GR7	9 Mar – 18 Apr
IV(AC) Sqn	RAF Cottesmore	Harrier GR7	23 Feb – 8 May
6 Sqn	RAF Coltishall	Jaguar GR3A	in Turkey – 31 Mar
IX(B) Sqn	RAF Marham	Tornado GR4	27 Feb – 1 May
12(B) Sqn	RAF Lossiemouth	Tornado GR4	28 Jan – 23 Apr, 30 Sep –
XIII Sqn	RAF Marham	Tornado GR4/4A	16 Apr – 19 Jun
14 Sqn	RAF Lossiemouth	Tornado GR4	1 Aug – 29 Sep
31 Sqn	RAF Marham	Tornado GR4	1 Jan – 29 Apr
41(F) Sqn	RAF Coltishall	Jaguar GR3A	in Turkey – 31 Mar
43(F) Sqn	RAF Leuchars	Tornado F3	1 Mar – 18 Apr
54(F) Sqn	RAF Coltishall	Jaguar GR3A	in Turkey – 31 Mar
111(F) Sqn	RAF Leuchars	Tornado F3	8 Feb – 18 Apr
617 Sqn	RAF Lossiemouth	Tornado GR4	6 Feb – 23 Apr
Support aircraft			
8 Sqn	RAF Waddington	E-3D Sentry airborne early warning	28 Feb – 30 Jun
10 Sqn	RAF Brize Norton	VC-10 tanker/transport aircraft	1 Mar –
23 Sqn	RAF Waddington	E-3D Sentry airborne early warning	28 Feb – 30 Jun
24 Sqn	RAF Lyneham	C130J transport aircraft	3 Mar –
30 Sqn	RAF Lyneham	C130J transport aircraft	3 Mar –
32 (The Royal) Sqn	RAF Northolt	HS125 comms/VIP aircraft	14 Jan –
39 (1 PRU) Sqn	RAF Marham	Canberra PR9 reconnaissance	9 Mar – 18 Apr, 5 Aug – 16 Sep
47 Sqn	RAF Lyneham	C130K transport aircraft	3 Mar –
51 Sqn	RAF Waddington	Nimrod R1 reconnaissance	1 Mar – 26 Mar, 13 Sep – 19 Sep
70 Sqn	RAF Lyneham	C130K transport aircraft	3 Mar –
99 Sqn	RAF Brize Norton	C-17 transport aircraft	16 Jan –
101 Sqn	RAF Brize Norton	VC-10 tanker/transport aircraft	1 Mar –
120 Sqn	RAF Kinloss	Nimrod MR2 reconnaissance	4 Mar –
201 Sqn	RAF Kinloss	Nimrod MR2 reconnaissance	4 Mar –
206 Sqn	RAF Kinloss	Nimrod MR2 reconnaissance	4 Mar –
216 Sqn	RAF Brize Norton	Tristar tanker aircraft	22 Feb –
Support helicopters			
7 Sqn	RAF Odiham	Chinook helicopters	8 Feb – 28 Feb
18(B) Sqn	RAF Odiham	Chinook helicopters	8 Feb – 12 Jun
27 Sqn	RAF Odiham	Chinook helicopters	8 Feb – 8 Oct
33 Sqn	RAF Benson	Puma helicopters	8 Feb – 4 May

Ground support

1 Sqn RAF Regiment	RAF St Mawgan	Force protection	3 Feb – 11 May
II Sqn RAF Regiment	RAF Honington	Force protection	28 Dec – 26 Apr
15 Sqn RAF Regiment	RAF Honington	Force protection	22 Jul –
16 Sqn RAF Regiment	RAF Honington	Ground-based air defence	21 Feb – 2 May
26 Sqn RAF Regiment	RAF Waddington	Force protection	29 Apr – 1 Oct
27 Sqn RAF Regiment	RAF Honington	Joint NBC Regiment	2 Feb – 21 Jun
34 Sqn RAF Regiment	RAF Leeming	Force protection	31 Jan – 26 Apr
51 Sqn RAF Regiment	RAF Lossiemouth	Joint Helicopter Force protection	15 Feb – 7 May
63 Sqn RAF Regiment	RAF Uxbridge	Joint Helicopter Force protection	15 Feb – 12 May
1 Tac STO + HQ	RAF Wittering	Tactical Survive to Operate	12 Feb – 21 May
2 Tac STO + HQ	RAF Leeming	Tactical Survive to Operate	4 Aug –
3 Tac STO + HQ	RAF Marham	Tactical Survive to Operate	7 Feb – 7 May
4 Tac STO + HQ	RAF Lyneham	Tactical Survive to Operate	Jul 02 – Mar 03
Joint Helicopter Force HQ	RAF Odiham & RAF Benson		23 Jan –
Mobile Air Operations Teams	RAF Benson		8 Feb – 7 Nov
Deployable Air Traffic Control	Various		28 Apr –
Tactical Supply Wing	RAF Stafford		29 Jan –
Mobile Catering Support Units	Various		22 Feb –
Tactical Communications Wing	RAF Brize Norton		10 Feb –
UK Mobile Air Movements Sqn	RAF Lyneham		28 Jan –
Joint Force Air Contingent HQ	RAF High Wycombe	Staff from UK Air Contingent HQ / Combined Air Operations Centre	20 Jan – 18 May
2 MT	RAF Stafford	In-theatre transport	22 Feb –
5131(BD) Sqn	RAF Marham	Bomb disposal	20 Feb –
Tactical Imagery Intelligence Wing	RAF Marham		20 Feb –
Tactical Provost Wing	RAF Henlow		7 Feb –
5001 (EAF) Sqn	RAF Stafford	Expeditionary Airfield Facilities	7 Mar –
Tactical Armament Squadron	RAF Marham		9 Feb –
Tactical Property Management	RAF Benson		29 Jan –
Tactical Medical Wing	RAF Lyneham		15 Feb –
Mobile Meteorological Unit	RAF Benson		1 Feb –

Royal Auxiliary Air Force and **ex-regular Reserve personnel** were also deployed

Work continues around RAF Tornados during a lightning storm

ANNEX C
OPERATIONS IN IRAQ - STATISTICS

Force levels

(see also breakdown of forces deployed in Annex B)

UK forces in combat phase

Land	28,000
Maritime	9050
Air	8100
National Component Headquarters and others	1000
Total	**46,150**
Coalition	467,000

UK forces in theatre at 17 November 2003

Land	8400
Maritime	650
Air	1450
Total	**10,500**
Coalition total	160,000

Soldiers emerge from a dust cloud

Multinational force levels in Multinational Division (South-East) at 17 November 2003

Czech Republic	Field hospital Military Police company	100
Denmark	Infantry battalion	480
Italy	Infantry regiment Engineer regiment Support battalion Support and logistics battalion Carabinieri regiment Air Force detachment National command centre Administration detachment	2800
Lithuania	Infantry platoon	30
Netherlands	Marine battalion Military Police platoon Field dressing station Engineer construction company Air Force detachment National support element Divisional staff	1100
New Zealand	Engineer company	100
Norway	Engineer squadron	160
Portugal	Military Police company	130
Romania	Infantry battalion Military Police company National support element	750
Total		**5650**

Air campaign statistics

No of UK sorties:

Offensive strike	1353
Air defence	169
Airborne early warning	87
Reconnaissance	274
Air-to-air refuelling (dispensing 18,884,000 lbs of fuel)	355
Airlift within theatre	263
Aero-medical	18
Total	**2519**
Coalition total	41400

No of UK weapons released:

Tomahawk land attack missile	*
Storm Shadow stand-off missile	27
Enhanced Paveway II precision-guided bomb	383
Enhanced Paveway III precision-guided bomb	9
Paveway II laser-guided bomb	263
Maverick anti-armour missile	39
ALARM anti-radar missile	47
Non-precision-guided munitions	138
Total	**906***
Coalition total	29200

**Substantial number of Tomahawk missiles launched from submarines; precise number classified and excluded from totals*

A pair of Tornado F3s patrol over the Gulf