

Air Historical Branch (RAF) Narrative

**THE ROYAL AIR FORCE IN
OPERATION GRANBY, THE FIRST
GULF WAR, 1990-1991**

COMMAND AND CONTROL

Author:

Sebastian Ritchie

*This narrative has been prepared using official MoD records.
The views expressed are those of the author and not
necessarily the MoD. All rights reserved. No part of this
publication may be reproduced, stored in a retrieval system, or
transmitted in any form without prior MoD approval.*

The Royal Air Force in Operation Granby, The First Gulf War, 1990-1991:

Command and Control

Table of Contents

1. Introduction
2. Doctrinal Evolution
3. The Operation Granby C2 Structure
4. The MOD Role
5. Planning the Air Campaign
6. Rules of Engagement
7. Conclusion and Aftermath

Appendices

1. Memorandum of Understanding between the Government of the Kingdom of Saudi Arabia and the Government of the United Kingdom of Great Britain and Northern Ireland Concerning the Deployment of UK Forces.
2. Extract from CDS 13/92, Report by the Granby Co-ordinator, Lessons Learned from the Gulf War, prepared by Air Chief Marshal Sir David Parry-Evans, 9 December 1991.

1. Introduction

In the winter of 1989 and the spring of 1990, world affairs were dominated by the collapse of the Warsaw Pact and the end of the Cold War. Statesmen across the globe heralded a new era of peace, and there was an immediate scramble to collect the so-called peace dividend – substantial savings in public expenditure based on defence cuts. The RAF nervously waited for the axe to fall. Then, without any warning, it was committed to its largest operation since the Suez Crisis of 1956 – the Gulf War, known in the UK as Operation Granby. As part of a US-led coalition formed in August 1990 in response to Iraq's annexation of Kuwait, the RAF's deployed force in the Gulf would ultimately number 157 aircraft, including 49 Tornado GR1s, 12 Jaguars, 18 Tornado F3 fighters, Nimrod maritime reconnaissance and intelligence collection platforms, Hercules transports, tankers and support helicopters. The RAF also deployed two RAF Regiment Wing Headquarters, two surface-to-air missile squadrons and four light armoured squadrons and field squadrons. The number of deployed RAF personnel totalled around 7,000 at peak.

The first Gulf War is typically divided into two parts using the American operation names Desert Shield and Desert Storm. Desert Shield, from August 1990 to January 1991, covered the initial formation of the coalition following the invasion of Kuwait, coalition operations to deter further Iraqi aggression and support diplomatic pressure to secure her withdrawal, and the expansion of coalition forces in theatre. Desert Storm, launched on 16 January 1991, aimed to evict Iraqi forces from Kuwait. For more than a month, the operation was conducted overwhelmingly from the air, the coalition air forces ultimately flying 100,000 sorties; the RAF flew 6,108. Finally, on 24 February, land forces launched an offensive into Kuwait and Iraq. Encountering only limited and ineffective resistance, they rapidly brought the war to a successful conclusion, and a ceasefire was declared just four days later.

The RAF's experience of air command and control (C2) during Operation Granby must be considered in its correct historical context. When the Gulf crisis erupted in August 1990, the Cold War had only recently ended and British defence policy was still geared to the NATO area. Out of Area (OOA) planning was not ignored but was inevitably felt to be of secondary importance, and the resources specifically allocated to it were limited. The range of contingencies for which plans could be devised was

consequently narrow, and the key requirement was not that plans should suit every eventuality in detail but that they should be flexible enough to permit adaptation as circumstances required. The need for flexibility and innovation in the development of C2 structures was evident throughout Granby.

2. Doctrinal Evolution

Typically, 'command' is now defined as the authority vested in an individual of the armed forces for the direction, coordination and control of military forces. 'Control' is defined as the authority exercised by a commander over part of the activities of subordinate organisations, or other organisations not normally under his command, that encompasses the responsibility for implementing orders or directives. Throughout the 1970s and 80s, the RAF produced no air doctrine of its own. Such doctrinal activity as the RAF undertook involved contributions to emerging NATO publications, which largely addressed Cold War scenarios. The end of the Cold War witnessed a renewed interest in independent national doctrine, and the first edition of AP3000, *British Air Power Doctrine*, was prepared by the RAF's Director of Defence Studies (D Def S) for the Air Staff in 1990 shortly before the first Gulf War broke out.

Air C2 was a somewhat contentious issue within NATO in the 1970s. The enduring air principles where C2 is concerned are (1) centralised command and (2) decentralised execution. Centralised command and control promotes an integrated effort and allows air power to be employed to meet recognised overall priorities. It also permits air operations to be redirected quickly to exploit fleeting opportunities, respond to changing demands and be concentrated at the critical time and place to achieve decisive results. Decentralised execution recognises that no single commander can personally direct all the detailed actions of multiple air units or service personnel. Decentralisation is therefore essential and is accomplished by delegating appropriate authority to execute tasks and missions.

These principles were broadly agreed between the RAF and the USAF, which provided the lead elements in the 2nd and 4th Allied Tactical Air Forces (2 and 4 ATAF) in NATO's central region. However, they differed in their interpretation of centralised command and decentralised execution. For their part, 2 ATAF emphasised co-ordinated decisions between air and ground elements at echelons of command close

to the battle area, with air power applications taking place beyond the range of organic ground force firepower.

The 2 ATAF concept of command and control encourages the local coordination of national air and ground forces whenever possible and for managing combat aircraft has adopted 'procedural control' methods that reduce the need for costly infrastructures.¹

By contrast, the USAF C2 concept was considerably more centralised:

4 ATAF achieved firepower flexibility and responsiveness through a complex array of command and control centers and an associated system for data processing and secure communication. This permitted the *positive control* of aircraft and the in-flight diversion of sorties to new targets.²

In the production of ATP-33, *NATO Tactical Air Doctrine*, a compromise was required to produce a document acceptable to both air forces and also to the US Navy and the Marine Corps. The agreed text laid down that 'Operational control of available air resources is exercised by a central, designated air commander at the highest practicable level.' This wording provided enough flexibility to accommodate differences of opinion as to what constituted 'practicability', and the term 'highest practicable level' has since reappeared in numerous air doctrine publications. Nevertheless, from the RAF's perspective, it actually implied some degree of decentralisation and forward collaboration between air and surface commanders. Equally, it served as a warning against centralising command to an impracticable extent.³

The UK command structures of the late 1970s were overwhelmingly geared to NATO commitments, yet the need for OOA C2 provisions had been recognised by the end of the decade. In April 1981, the government announced:

1. David J. Stein, *The Development of NATO Tactical Air Doctrine, 1970-1985* (RAND, 1987), pp. v-vi.

2. Stein, *NATO Tactical Air Doctrine*, p. 18.

3. Stein, *NATO Tactical Air Doctrine*, p. 20.

Improvements are being made in command and control arrangements for overseas operations; an existing two-star headquarters will be nominated and staff earmarked to take command of any contingency intervention. This headquarters will be in close contact with all formations that might be called on for such operations.⁴

However, this plan had not progressed very far by the following year. Consequently, when Argentina invaded the Falklands, the UK did not possess a permanent joint or joint force headquarters, nor were there cadre-based headquarters provisions that could be enlarged in time of emergency.

In the Falklands War (Operation Corporate) UK C2 was only truly unified and joint at the Chiefs of Staff level, an obvious example of over-centralisation rendered more problematic by the fact that the Chiefs of Staff and their subordinate departments in the MOD were not prepared or equipped to exercise many of the operational C2 functions suddenly assigned to them. Moreover, the MOD's decision to assume an operational command role while assigning CINCFLEET Headquarters at Northwood the status of Task Force Headquarters created disunity within the command chain and cut straight across the C2 relationship that would otherwise have existed between Northwood and such front-line commands as Headquarters Strike Command (HQSTC), leaving them merely with an 'information link' of questionable effectiveness. Beyond this, establishing a Task Force Headquarters 8,000 miles from the theatre of operations without any subordinate headquarters closer to the Falklands could also be viewed as over-centralisation and made the exercise of joint command extremely difficult at the tactical level.

At the MOD level, the Assistant Chief of Air Staff (Operations) played the key air C2 role, while the post of Air Commander was assigned to the Air Officer Commanding (AOC) 18 Group, based at Northwood, and normally in charge of maritime air reconnaissance alone. Such sweeping OOA command functions had never previously been envisaged for either officer; the responsibilities involved stretched far beyond their normal competences and overwhelmed their permanent staff, office and

4. Cmnd. 8212-I, *Statement on the Defence Estimates 1981* (HMSO, London, 1981), p. 32, para 416.

communications facilities. At the Task Force level, the RAF's doctrinal position in this period assumed forward coordination between air and surface force commanders, as we have noted. This was not forthcoming in Corporate, and the Task Groups lacked the air expertise necessary to ensure that limited air assets were used to best advantage to perform offensive, reconnaissance and other functions. Decentralised execution was achieved quite effectively from Ascension Island, which served as a vital staging post between the UK and the South Atlantic, but proved far more problematic in the immediate battle area.

That this system worked – to the extent that it did work – remains a tribute to innumerable personnel from the RAF as well as the other services. Between them, they took the extremely unusual circumstances in their stride and adapted as best they could to the dramatic increase in the volume and tempo of work, accepting that a great many normal channels of command had to be bypassed and replaced with unconventional or unanticipated alternatives. Nevertheless, it is easy to see how the Corporate C2 machinery could have been improved.

By 1984, the deployed Joint Force Headquarters concept was firmly established within UK defence policy, and a new operational headquarters – the Primary Warfare Headquarters (PWHQ) – was being constructed at HQSTC. This became one of the two headquarters deemed suitable for the JHQ role in future OOA operations, the other being Northwood. Meanwhile, at the MOD level, the single-service Vice-Chiefs of Staff and the multiple Assistant Chiefs of Staff positions – including the Operations positions – were eliminated and replaced by single Assistant Chiefs of Staff posts for the RAF, the Army and the Royal Navy. The disappearance of the Assistant Chiefs of Staff (Operations) should have ruled out any prospect of the MOD again seeking to exercise operational command responsibilities, but the reality was not quite so clear cut. All three services retained operations staffs at MOD level.

As we have noted, the revival of independent national doctrine after the end of the Cold War resulted in the publication of the first edition of AP3000, *British Air Power Doctrine*, in 1990. AP3000 again embraced the concept of centralised command at the highest practicable level, which was now defined as 'that at which relative priorities

of combined/joint demands on air resources can best be assessed'.⁵ It also stressed that control should not be exercised from too high a level, as this could produce inflexibility and inefficiency. In other respects, AP3000 drew heavily on NATO doctrine, employing NATO definitions of command and control, emphasising the critical importance of unity of command, and pointing out that there would rarely be enough air resources to meet all demands: tasking priorities would invariably have to be set. Air C2 process and organisation were addressed in broad terms, with process broken down into four stages:

- 1) Analyse the situation
- 2) Plan – develop a plan or concept of operations
- 3) Direct – issue orders and directives
- 4) Control – monitor the progress of the operation and assess results

The basic organisational construct envisaged the commander himself, his staff and his headquarters facilities.

AP3000 went on to describe the four so-called levels of assignment – allotment, apportionment, allocation and tasking. It argued that allotment, apportionment and allocation 'should be made in accordance with priorities established between specific tasks', a judgement that effectively ruled out any other basis for determining the division of resources. It also considered the relationship between assisted and assisting commanders and supported and supporting commanders, stressing the need for the commander of the assisted force to indicate in detail to the assisting commander the support missions he wished to have fulfilled. Similarly, when air operations were supporting land or maritime objectives, or land or naval forces were operating in support of air objectives,

The supporting commander and the supported commander(s) and their staffs should work as a team throughout the period from the creation of joint/combined surface/air plans to their final execution.

Beyond this, AP3000 considered the characteristics required of an air control organisation in terms of flexibility, mobility, survivability, interoperability,

5. The following paragraphs draw on AP3000, *Royal Air Force Air Power Doctrine* (1990), pp. 33-46.

communications and information process and display infrastructure. It described centralised and decentralised air control structures and the exercise of air control from the level of land and maritime forces, as well as airborne control assets, and defined positive and procedural control.

The role of the MOD was described as the ‘coordination of all policy and administrative matters affecting the fighting services’ including ‘the conduct of operations’. Yet the clarity of this statement was subsequently undermined somewhat and left open to interpretation by an acknowledgement that ‘within the guidelines determined by Ministers, the Ministry of Defence is responsible for the higher direction of operations ... through the Ministry of Defence Joint Operations Centre.’⁶

3. The Operation Granby C2 Structure

By the time Iraq invaded Kuwait in August 1990, UK C2 procedures for OOA operations were founded on principles that were both national and joint, with command in theatre assigned to a Joint Force Commander (JFC) operating from a deployed headquarters. In the UK, the Chiefs of Staff would delegate command to a JHQ located either at HQSTC or Northwood. The capacity of both headquarters to fulfil this function was tested annually in live or command-post exercises. One such exercise had been completed only two weeks before the Gulf crisis erupted, HQSTC being assigned the JHQ role.

By contrast, preparations for *coalition* operations were still focused on NATO and the European theatre, and British forces had no plans to conduct such operations elsewhere. Nevertheless, immediately after Granby was launched, CDS appointed a Joint Commander, Air Chief Marshal Sir Patrick Hine, who set up his JHQ within the PWHQ at HQSTC. As the only UK forces committed to Granby at this stage were drawn from the RAF, he in turn appointed a UK Air Commander, Air Vice-Marshal ‘Sandy’ (later Air Chief Marshal Sir Andrew) Wilson, the Air Officer Commanding 1 Group and the senior RAF officer on the Joint Forces Operations Staff (JFOS) – the staff earmarked to man the JFHQ if it was activated.

6. AP3000 (1990), pp. 142, 144.

The Air Commander was directed

- To contribute, in conjunction with the RSAF⁷ and US CENTCOM,⁸ to integrated Allied air defence operations within the nominated area of responsibility;
- To prepare to contribute to Allied offensive support and tactical reconnaissance operations should Iraqi forces move into Saudi Arabia;
- To contribute to maritime patrol operations;
- To plan operations as directed by an Allied Force Commander or in conjunction with the Saudi and US military commanders.

The natural location for the UK Air Headquarters was Riyadh, where CINCCENTCOM's headquarters was soon established along with the coalition (overwhelmingly USAF) Air Headquarters and Combined Air Operations Centre (CAOC). The RAF did not possess a deployable headquarters of its own in 1990, so the new UK Air Headquarters in Riyadh was at first a primitive affair and lacked all but the most rudimentary facilities. Initially, it comprised just two rooms within the main Royal Saudi Air Force building that were not even equipped with external telephone lines. Two more were then made available in the British Embassy, providing extra space, a secure environment and better communications, including a secure line back to London.

Unlike the Army and the Navy, the RAF did not maintain a formed unit to provide headquarters staff for deployed operations at that time. Staff for the Air Headquarters were therefore drawn from an advance party that had previously been sent to Dhahran air base to prepare for the first aircraft deployment, and from RAF personnel earmarked for positions within the JFOS (which was not permanently manned). Subsequently, the staff was enlarged on an incremental basis as and when the need

7. RSAF – Royal Saudi Air Force.

8. CENTCOM – US Central Command.

arose, selection being based chiefly on subject-matter expertise rather than air C2 training or experience; the majority of augmentees were drawn from the various group headquarters. By the end of August, the Air Commander was supported by some 40 personnel.

The UK Air Headquarters soon outgrew the RSAF building. Via local purchase, the RAF therefore procured portacabins, furniture, air-conditioning units and other essentials and established a dedicated headquarters complex in the RSAF building car park. CIS provisions were also steadily improved, but it was a mammoth task. Indeed, Operation Granby demanded CIS of greater range and capacity than had ever before been marshalled for a British military campaign. According to one after-action report,

At the outset of op GRANBY the deficiencies and weaknesses in CIS in our OOA capability, which had been known for a long time, were brought into stark relief. There was barely sufficient communications equipment to support a small shore-based 2 star HQ ... Successive past attempts to rectify the problem failed, as low priority had been given to satellite, trunk communications, mobility and the vehicles required for OOA operations.

In the limited time available, this situation could only be addressed through a financial outlay that ran into many millions of pounds and through an extensive series of short-notice procurement and installation measures to link up the UK, theatre C2 nodes and the deployed force elements. Standard contingency plans for OOA operations envisaged the employment of two tactical satellite communication (TSC) stations, and generally presupposed a single port of entry in theatre. The sheer scale of Granby and the many ports of entry in the Gulf for communications from the UK soon overwhelmed available CIS resources. At JHQ alone, some £5.6 million was spent on enhancing CIS between August 1990 and March 1991.

The RAF was responsible for providing strategic satellite communications for all three services and had therefore to establish the main communications network and then collaborate in completing in-theatre links with the local systems of the Army and Navy. This entailed procurement of the systems, testing, modifying and deploying them and

making them operational. The initial task was to provide communications to and from the UK for the headquarters locations, the airheads in Saudi Arabia, Bahrain and Oman, and the Navy Task Group. To this was added in due course the extra headquarters, both static and deployed, of 1 (UK) Armoured Division, its main logistic area and its supporting arms.

Satellite communications were provided by Skynet 4A and 4B, which had luckily been deployed during the preceding eighteen months. A third satellite, 4C, was launched in the early days of the crisis and declared operational in time to provide additional capacity and allow spare capacity to be offered to coalition allies. In addition to the three UK TSC/502 terminals available at the beginning of the operation, five large TSC stations were deployed on loan from the United States and fourteen Land Rover-mounted VSC 501 mobile stations, previously earmarked for the European theatre, were diverted from production, enhanced, and pressed into service. Each Granby TSC station had at least double the capacity of a single pre-Granby station, and some had as much as ten times the pre-Granby facility. The largest stations had 200 times more data capability.

The Air Staff Management Aid (ASMA) was selected as the joint strategic command and control system for Granby shortly after the operation commenced. In the next seven months, ASMA hardware was set up at 24 locations in the Gulf, at 30 locations in the UK, and in all the deployed Royal Navy ships. Approximately 100 processors, 275 VDUs and 130 printers were installed during the operation. The quantity of hardware employed vastly exceeded the normal requirements of OOA exercises.

While the construction of an effective C2 architecture proved extremely challenging during Granby, the integration of deployed RAF forces into the coalition was relatively straightforward due to the simplicity of the American command structures in the Gulf. These encompassed the Commander-in-Chief – CINCCENTCOM – and his four component commanders, including the US Joint Forces Air Component Commander (JFACC), Lieutenant General Charles Horner. With US leadership of the coalition founded on this basis, the forces of other nations could easily be incorporated into the US components. Where the RAF was concerned, deployed assets remained at all times under the operational control (OPCON) of the UK Air Commander, while tactical command was delegated to detachment commanders and tactical control to the

JFACC. This meant that the role of the UK Air Commander was largely consultative and advisory. His task was to collaborate with the Americans to make the best possible use of his forces.

Within this construct, there was scope for considerable flexibility in the way that command was exercised. For example, there was very close command chain involvement in planning and tasking the Tornado GR1 detachments, both in their initial low-level airfield denial role and their later shift to medium-level precision bombing. This was essential not only to address changing operational circumstances – the defeat of the Iraqi Air Force and the high risks involved in airfield denial missions – but also to ensure sufficient logistical support and the deployment of laser-designation capabilities into theatre. By contrast, where the RAF's Jaguars were concerned, there was far less direction from above, and the detachment commander was left to decide whether his aircraft should operate at low or medium altitude in Desert Storm. Pressure from squadron level also resulted in capability enhancements, such as the acquisition of the CBU-87 cluster bomb and computed weapon aiming for the CRV-7 rocket.

The single fundamental command function that the UK Air Commander retained was the veto. While he could *advise* US commanders on how the RAF detachments might best be employed, he could, if necessary, *insist* that they should not be employed in certain circumstances. This so-called 'red card' function has remained fundamental to the exercise of coalition air C2 ever since.

Although, from a modern-day perspective, these arrangements might appear familiar and rational, at the time they seemed unorthodox. Even so, they worked very effectively and with the minimum of friction. More challenging was the task of reconciling national and coalition C2. The RAF initially provided all the UK force elements deployed on Operation Granby. No land contingent was committed, and the Royal Navy task group in the Gulf functioned under the auspices of an entirely separate operation – Armilla – which had been initiated in 1980. The limited scale of British deployments and the fact that only one service – the RAF – was at first involved persuaded the Chiefs of Staff that it was unnecessary to create a JFHQ in theatre; the Air Headquarters apparently sufficed.

The obvious weakness of this arrangement lay in the fact that no single UK commander could be appointed in theatre due to the separate status of the Armilla Task Group. Apart from the fact that the Joint Commander had to deal with two command chains, there was no British officer in the Gulf who could speak for all deployed UK forces at the interface with CINCCENTCOM. The primary decision-making body in Saudi Arabia, CINCCENTCOM's Component Commanders Committee, comprised the CINC himself, his deputy, his Chief of Staff and his component commanders. Both the Joint Commander and the Air Commander soon grasped that UK representation on the committee was highly desirable, but it would depend on the appointment of a UK JFC.

Proposals to appoint a JFC were first tabled early in September 1990, but the issue proved controversial. In the post-Cold War environment, all three armed services faced reductions in size following the Options for Change defence review. They each reasoned that a demonstration of their value and potential might stave off the most far-reaching plans for cutting their strength and that, for this purpose, a strong influence on C2 was necessary. The Royal Navy was also extremely reluctant to accept that an officer from another service might exercise operational command of the Armilla Task Group. Yet the Air Commander was a two-star officer whereas the Commander Task Group (CTG) held one-star rank, and the JFC's role could hardly have been exercised by a naval officer afloat in any case. Therefore, if a single command chain was established, it followed that the appointment would go to Air Vice-Marshal Wilson.

For these reasons, the Royal Navy raised strong objections to the unification of UK C2 in theatre. Several convoluted and suboptimal alternative C2 options were then considered, the Navy promoting a structure that would have assigned full command to the Joint Commander, while dividing Operational Command below him between CINCFLEET, for deployed maritime forces, and the JFC, for air and land. Yet such an arrangement would not have satisfied the critical requirement to appoint a single British officer in the Gulf with responsibility for all deployed UK forces.

In a signal to CDS on 12 September, the Joint Commander sought to clarify his requirements. He needed Full Command only of Strike Command forces (which as AOC-in-C Strike Command he already exercised); OPCOM of all other Operation

Granby forces would be entirely sufficient. He was also content that the JFC should have OPCON of British ground and air assets. However, he did not believe that the CTG should exercise OPCON of deployed naval elements. In his view, it was essential for the JFC to be responsible for all British forces in theatre so that he could function as the Joint Commander's representative, before CINCCENTCOM in particular, on all matters of consequence affecting their employment.

To achieve that essential criterion, I would prefer to give OPCON of naval forces to Wilson *while leaving him free to delegate all normal day-to-day OPCON functions to CTG 321.1*.⁹

This was the critical point. The Joint Commander was not proposing the detailed direction of deployed naval units from Riyadh. Rather, he envisaged that the JFC would be responsible for policy issues such as ROE, requests for authorisation to take action in accordance with ROE or action not in such accordance, proposals for changes in mission directives or operating areas, politically sensitive issues relating to the co-ordination of maritime operations with coalition naval contingents, local difficulties over the use of territorial waters, and so on. He continued:

My rationale for this approach is that I see a clear need for direct dialogue on such matters between our commander in Riyadh and CINCCENTCOM to minimise the risk of misunderstanding or misconception before either guidance is given to the CTG or, as necessary, Wilson defers to or through me for advice.

By dividing OPCON in this way, additional requirements for staff and equipment at Riyadh could be maintained within acceptable limits. While such a division was somewhat unconventional, the Joint Commander felt that the unusual circumstances of the Gulf conflict called for innovation.

Although CDS agreed, there was still no consensus within the Chiefs of Staff, and it was ultimately necessary for him to impose a solution along these lines. The Front-Line Commanders in the UK retained Full Command, while OPCOM was assigned to the Joint Commander. The JFC was given OPCON of all deployed UK forces but on

9. Author's italics.

the basis of extensive delegation to the CTG, the precise division of authority being determined by the Joint Commander and CINCFLEET. The JFC was then named the British Forces Commander Middle East (BFCME) and the appointment was bestowed on Air Vice-Marshal Wilson. On 19 September, CDS informed the Secretary of State that the BFCME had been given a seat on the US Component Commanders Committee. Yet the government had meanwhile announced the dispatch of British ground forces to the Gulf and the enlargement of the air contingent. On this basis, the BFCME post was elevated to a three-star Army appointment, leaving the Air Commander free to direct his focus entirely towards the deployed RAF detachments.

The advantages that stemmed from this revision of C2 in the Gulf are easily understood, particularly where access to the Component Commanders Committee is concerned, but there was also one obvious disadvantage. Inevitably, the appointment of a three-star JFC also implied that he should have a JFHQ – Headquarters British Forces Middle East (HQBFME). And yet, because all deployed UK air, land and naval forces were effectively incorporated into US-led components, there was only a limited role for the JFHQ to play. Indeed, to an extent, it represented an unnecessary command tier, and its very existence created the potential for friction and the extension of decision-making processes.

This was fully grasped by Air Vice-Marshal Wilson, who sought to limit its scale and the scope of its activities to reflect the realities of C2 in a US-led coalition environment. It was not entirely appreciated by the new BFCME, Lieutenant General Sir Peter de la Billiere, who later recorded that his aim on reaching the Gulf was to integrate the three services – to ‘pull them together’ into a ‘corporate, tri-service group’.

In my mind it was essential that Navy, Army and Air Force should be properly co-ordinated and have their efforts directed in such a way as to maximise the effect of the British contribution as a whole.

This declaration unquestionably exaggerated the potential for British forces to combine into a national component in the Gulf. De la Billiere was not appointed to pull British forces together into a ‘corporate, tri-service group’.

As the two officers held such different views on the role of HQBFME, there was inevitably considerable tension during their handover period early in October, and Wilson ultimately put a secure telephone call through to the Joint Commander in the UK to establish whether de la Billiere was acting under his instructions. The Joint Commander replied that he had not briefed any changes at all. This effectively confirmed his intention that the HQBFME should exert only limited influence and, where air C2 was concerned, his aspirations were entirely fulfilled.

The nature of command and control connections with the Saudis was also finalised in September; Air Vice-Marshal Wilson later recalled that the negotiations were difficult and highly charged. Whereas it was clear that military operations would be planned and directed through CINCCENTCOM, Saudi Arabia's position was paramount: operations were likely to be conducted from her soil and under her auspices and could not be initiated without her sanction and involvement. At the highest level, military decisions were taken by the US/Saudi War Council and, as CINCCENTCOM was the US representative there, it could be tacitly assumed that no orders would be issued from his headquarters without previous sanction from the Saudis. Nevertheless, it was important that British command relations should not appear to be conducted exclusively with the Americans, even though this was *de facto* the position. Formally, at least, the sovereign role of Saudi Arabia in the higher direction of the campaign had to be recognised. In addition, not least for diplomatic reasons, the Saudis were anxious that their command relationship with the UK should not appear different from their relationship with other coalition members, even if some difference was implied by the intimacy of in-theatre Anglo-US C2 arrangements.

The Saudis eventually accepted that British forces would be integrated into the US component command structure. The BFCME was simply tasked to maintain a close liaison with the Saudi Joint Commander-in-Chief, Prince Khalid bin Sultan. They also agreed that British forces would 'act in accordance with the overall strategic guidance of the supreme commander of the Saudi Arabian armed forces' but would remain under national command. A memorandum of understanding to this effect was drawn up on 18 September 1990 (see Appendix 1).

Following Air Vice-Marshal Wilson's promotion and appointment as AOC RAF Germany, Air-Vice Marshal WJ (later Air-Chief Marshal Sir William) Wratten became

UK Air Commander in the Gulf. The deployed RAF forces under his command were fully integrated into the American command chain under General Horner, all plans for the offensive and defensive employment of RAF aircraft were developed through collaboration between Wratten's and Horner's staff, and Wratten's headquarters remained co-located with Horner's in Riyadh.

However, as the various RAF detachments were formally under national command, Wratten also served as Air Commander to the BFCME, providing him with daily briefings supplemented by many informal meetings. These contacts were facilitated by the fact that his quarters were next door to de la Billiere's and were shared with the Chief of Staff at HQBFME. He also convened regular meetings with the detachment commanders and reported by telephone to the Joint Commander, normally twice per day. In this way, a national UK air C2 chain was maintained alongside the coalition structures, but the RAF's role in Desert Shield and Desert Storm was overwhelmingly determined by the coalition and the UK Air Headquarters and not by HQBFME.

The system of divided OPCON functioned very smoothly in most respects, as far as the RAF was concerned. When friction occurred, it was usually because the correct command channels had been bypassed. For example, in December 1990, there was a disagreement between the Air Headquarters and the Royal Navy's CTG concerning the geographical boundaries of the operations area patrolled by the RAF's Nimrod MR2s. The CTG wished to extend the operations area further north, but the Air Headquarters opposed the extension, arguing that the operational risks involved outweighed such benefits as were likely to accrue.

Theoretically, as the Nimrods were RAF assets, this should have settled the issue unless there was a pronounced change in the risk-benefit equation, but the CTG was not prepared to accept the Air Headquarters' stance and appealed to the BFCME to intervene. He initially received an enthusiastic response, but the BFCME ultimately decided that he could not overrule the Air Commander without first referring the matter back to JHQ, and it was not until the MR2 detachment was completely re-rolled to so-called Direct Support in January that the extension was approved. Yet such episodes were very rare. The BFCME's focus was chiefly on British ground forces, his headquarters functioned largely as a higher UK land headquarters and his main contribution to the Desert Storm plan was confined to the role of the British Army. It is

perhaps worth noting that, like CNS and CINCFLEET, he was reluctant to see his service fully integrated into the coalition. Indeed, he uncoupled UK land forces from subordination to the US Marine Corps on the coalition right, allowing them to be deployed at divisional scale – far more independently – in CINCCENTCOM's famous left hook.

The Operation Granby air C2 arrangements overrode and supplanted existing peacetime structures, and it took time for the implications to be fully assimilated. This was especially true where the RAF's group headquarters and the individual detachments in the Gulf were concerned. As the groups were accustomed to working directly down to station level and vice-versa in the UK, the requirement to work up through JHQ instead was not always embraced at first, and many RAF staffs meanwhile continued to employ their established command processes. This sometimes meant that decisions with important operational implications were taken outside the formal Granby C2 chain.

This problem particularly affected the multiplicity of aircraft enhancement proposals initiated under Urgent Operational Requirement (UOR) procedures. As late as December 1990, the Director of Operations at JHQ felt constrained to remind all the relevant headquarters and the MOD of the problems that persistently arose after Granby issues were routed through the wrong channels. The correct chain of command to deployed units was through JHQ and HQBFME.

4. The MOD Role

The MOD's role in operational C2 during the Falklands conflict was noted earlier in this narrative. We have also observed that the MOD's C2 functions were not very precisely laid down in doctrine when Operation Granby was initiated. The organisational changes implemented within the MOD during the 1980s and the adoption of the JHQ and JFHQ structure all implied that there would be no return to the system of command employed during Operation Corporate. Nevertheless, the new C2 arrangements soon came under critical scrutiny because the Secretary of State for Defence, Tom King (later Baron King of Bridgwater), considered JHQ to be insufficiently responsive.

The fundamental difficulty arose from a relatively new development – the almost instant transmission of news via satellite broadcasting, which sometimes resulted in the press and Members of Parliament becoming aware of occurrences in theatre before the responsible government ministers. Mr King soon found that he was politically vulnerable and came to believe that he needed a more direct channel of communication with the Gulf. This, he felt, could be achieved by cutting the number of intervening headquarters and establishing command lines directly between Riyadh and the MOD. He first raised his concerns with CDS following a visit to the Gulf at the end of August 1990. While in theatre, he invited the UK Air Commander to contact him directly – bypassing JHQ – if that seemed necessary at any time. On his departure, he told Air Vice-Marshal Wilson that he wished him to be his emissary in Saudi Arabia on all matters up to the highest level.

The issue came to a head in late September, when Mr King prepared a lengthy memorandum on the subject. In it, he argued that reporting from the front line was too slow, that it was difficult to pin down specific responsibilities within the MOD or between the MOD and JHQ, and that there was a reluctance in some quarters to provide him with detailed information quickly. Referring to the unusually complex political and strategic dimensions of the operation and ‘the exceptionally close TF/Press presence’, he argued that there was an urgent need to respond rapidly and effectively to developments in theatre. He could not discharge his responsibilities as Secretary of State properly without what he termed ‘a frank and quickly responsive relationship with the Department’, and he was impressed by the simpler command chain adopted by the United States, which ran directly from CENTCOM’s forward headquarters in Riyadh to the Department of Defence in Washington. Mr King therefore proposed that the entire command, administrative and reporting role of JHQ be re-examined and that the possibility of transferring headquarters functions from the UK to Riyadh be considered. He also sought to streamline reporting channels within the MOD.

The Secretary of State’s criticisms were in some ways compelling, yet they were not supported by specific examples, and his grasp of UK C2 arrangements was rather less than comprehensive. Apart from the fact that he underestimated the role of JHQ, implicit in his arguments was the transfer of some JHQ functions to the MOD – a direct

reversal of the decentralisation pursued since Corporate. Indeed, there is no doubt that the MOD was even less prepared to play an operational C2 role in 1990 than in 1982. Almost more striking than the memorandum itself, however, was the timing of its preparation. Mr King elected to raise this fundamental issue while CDS was abroad, asking VCDS, General Sir Richard Vincent, to review the matter urgently instead.

On 26 September, General Vincent duly visited JHQ to consult the Joint Commander. In the recollection of the Deputy Chief of Defence Staff (Commitments) (DCDS(C)), who also attended the meeting, the discussion was distinctly uncomfortable. Under the Secretary of State's remit, their mission was to decide whether JHQ – so recently established by the Defence Staff – was necessary at all, or whether it could be removed from the command chain along with the Joint Commander himself.

At the beginning of the meeting, VCDS tabled a loose minute outlining his thoughts on the issue; this was to provide the basis for a submission to CDS on his return to the UK. No copies of the document have survived, but it concerned the Joint Commander because, in his words, it 'appeared to go some way towards accepting S of S's premise that the present OOA C2 structure would slow down the decision-making process.' Air Chief Marshal Hine pointed out that no specific inadequacies in the C2 structure had been revealed and that a similar structure had been employed in a number of recent OOA exercises. He clearly felt that the Defence Staff had too readily referred the matter to JHQ without properly explaining some of the issues to Mr King – particularly 'the difference between political direction and military C2. It was essential to get him to understand this difference and, as military men, it was our duty to do so.' He also drew attention to the practical problems involved in the Secretary of State's proposals. First, the MOD could not provide unified operational and logistical C2 in the manner exercised by JHQ, and the separation of these functions was contrary to all accepted military practice; second, the MOD lacked the necessary communications and intelligence infrastructure to assume JHQ's functions.

DCDS(C) was apparently sympathetic to these arguments. In addition, he felt that the necessary degree of separation between the military commander and the Secretary of State would be impossible to maintain if the Joint Commander's functions were exercised from within the MOD. 'It was important to remove the C-in-C level from the Ministry of Defence, otherwise Tom King was in danger of assuming that role himself.'

He subsequently recalled that the established procedure by which OPCOM of deployed forces was exercised from the UK during OOA operations was favoured by all three services.

At the conclusion of the meeting,

VCDS agreed to re-draft his submission to CDS to reflect not only the difficulties associated with providing adequate communications and intelligence support, but also to reflect military concern over any attempt to split functional control and responsibility for logistic support.

It was also agreed that 'the S of S should be encouraged to seek the collective view of the Chiefs of Staff before any fundamental changes to the C2 structure were made.'

VCDS duly conveyed the meeting's conclusions to CDS on his return to the UK together with a recommendation that internal MOD arrangements for briefing the Secretary of State be improved. He pointed out that Mr King's office sometimes passed his questions to the wrong authorities in the first instance, a problem that might be solved through the establishment of a briefing cell. This cell would be answerable to CDS and the Secretary of State, handling all enquiries from the Secretary of State's office initially.

Mr King met CDS and VCDS on 28 September to resolve the issue. VCDS reiterated all the arguments in favour of retaining JHQ, but he did concede that a better flow of information was needed, 'especially when the media were now so well equipped to pass information from even forward areas'. CDS agreed, referring to the idea of establishing a briefing cell. In response, the Secretary of State now crucially accepted that JHQ exercised important functions. His concern was simply that 'it should not impede rapid communications.' He desired direct communication between BFCME on one hand, and himself and CDS on the other, arrangements being made to notify the Joint Commander of any such dialogue. He did not favour the creation of new 'cells' for processing information, which were likely in his opinion to create fresh bottlenecks. Rather, there should be direct reporting from desk officers to himself and CDS, while others in the command chain were kept informed. Although major proposals would

obviously have to be staffed, more routine matters could be submitted direct. He then declared that 'he would ask his office to make detailed arrangements on these lines.'

Under the system that the Secretary of State had in mind, he and CDS would in reality have received operational information before the Joint Commander. Such information would also have reached Mr King before his own staff, bypassing desks that might have verified, augmented or otherwise contributed to it. It is difficult so see how raw and uncorroborated reports of this nature could possibly have been very useful to him. Nevertheless, he remained intent on accelerating the information flow. The service chiefs were, on the other hand, determined not to undermine the position of JHQ.

It is therefore hardly surprising that the issue was never fully resolved. Both CDS and BFCME scrupulously operated through JHQ, and their subordinates were specifically instructed to do so. Hence, the only direct channel between London and Riyadh took the form of regular telephone calls from the Secretary of State to General de la Billiere. It was agreed that CDS's office should be notified before any call to Riyadh so that he or a member of his staff could be present. The BFCME always reported the gist of these conversations to JHQ afterwards. If drawn by Mr King on to matters not previously discussed with JHQ, the BFCME stressed that he was offering only a personal view and that the Joint Commander would present the official position after he had been briefed.

Despite the Secretary of State's reservations, an Operation Granby 'Assessment Cell' was created within the MOD and tasked to provide an instantaneous briefing point for the Secretary of State and CDS. Its existence helped to parry Mr King's criticism, but he made little use of it and continued to demand impromptu one-to-one briefings from desk officers on a wide range of Granby matters.

JHQ's perspective on what was in many respects the same problem was of course very different. It was naturally recognised that the Secretary of State had to be closely informed about many aspects of Operation Granby and that key decisions had to be referred to his level. Yet there was a mass of more routine business that could more appropriately be handled by professional military staffs and which had to be dealt with promptly. Many deadlines were the more rigid because they were linked to a chain of associated activities. The Director of Operations at JHQ recalled, for example, that the

enlargement of the support helicopter force in the Gulf (Pumas to support 7th Armoured Brigade) necessitated a further decision to deploy the necessary support equipment and weapons. As the support equipment was to be moved by sea while the helicopters were dismantled and flown to the Gulf in transport aircraft, shipping arrangements had to be cleared well ahead of the aircraft movement because of the longer transit times.

Within JHQ, there was intense frustration over the length of time required by the MOD to sanction such deployments. As early as 4 September, CDS was warned of 'a bow wave of feeling building up amongst the staff about the amount of additional and, as seen by them, unnecessary work which is being generated by ministers back-seat driving'. The problem persisted and, on the eve of Operation Desert Storm, the Director of Operations went so far as to warn the Joint Commander that the delays were having an adverse effect on morale. Where the Pumas were concerned, for instance, JHQ felt compelled to dispatch the support equipment before ministerial endorsement was received. On one occasion, it was necessary to seek ministerial authority to deploy just ten sappers to the Gulf.

It appeared that ministers and their staffs were involving themselves in incidentals and demanding consultation about matters that did not require their input. To this end, they regularly sought submissions buttressed by extensive background briefings, along with full consideration of alternative strategies and likely ramifications. Important decisions were postponed while briefs and discussion papers were drafted and circulated. For the hard-pressed JHQ staff, this was a severe distraction from the mass of other business demanding urgent attention. Under constant pressure from the MOD to bring deployed forces to operational status within prearranged time-scales, JHQ ironically found these deadlines jeopardised by the ministry itself. The Director of Operations made two recommendations, which the Joint Commander in turn passed to CDS. First, the Joint Commander should see all submissions to ministerial level concerning Operation Granby so that he was not blind to any significant developments that might directly affect the conduct of operations; second, the Secretary of State should delegate to CDS or DCDS(C) authority to approve minor force enhancements.

The difficulties experienced by JHQ became the focus of a post-operation report likewise prepared by the Director of Operations. This went so far as to suggest that

Some elements within the MOD had difficulty recognising that the reality of war against an aggressive dictatorship demanded that the central staffs should function as a centralised war policy-making structure with a precise delegation of authority to the operational commander. Their evident unwillingness to move away from the niceties and comforts of peacetime bureaucracy placed pervasive constraints on the planning and implementation of a most complex plan involving the full gamut of operational and support considerations ... Sec (O)(C)'s¹⁰ position apparently reflected greater concern for the well-being of the S of S if faced with hostile questions in the House rather than the well-being of our men and women going to war.

These criticisms may seem harsh, but they were supported by a number of specific and detailed illustrations of slow decision making within the MOD. It was recommended that, in any future and comparable operation, a strong MOD Secretariat representation at JHQ level would be desirable, and this proposal was endorsed in the main Lessons Learnt documents prepared after the cessation of hostilities in the Gulf (see Appendix 2).

5. Planning the Air Campaign

The task of planning the air campaign was overwhelmingly the responsibility of the USAF; it can more properly be considered a matter of USAF than RAF history and receives comprehensive coverage in the official USAF narrative.¹¹ Nevertheless, the RAF was a leading contributor to coalition air power and was fully integrated into the air campaign plan. It also prepared its own targeting philosophy and, uniquely among the US's allies, gained representation within the planning team that devised the Desert Storm air campaign. For these reasons, a brief survey of planning structures and procedures is essential.

10. Sec (O)(C) – Secretariat (Overseas)(Commitments).

11. E.A. Cohen et al, *Gulf War Air Power Survey (GWAPS) 1: Planning and Command and Control* (Washington DC, 1993).

In Operation Granby, the coalition had five months to devise an offensive based on classic air campaign planning principles. The result was a very highly choreographed, phased assault that incorporated strikes on innumerable fixed targets, as well as Iraqi ground forces. At the time, given the revolutionary air capabilities employed in the Gulf, it was virtually taken for granted that the planning process was also breaking new ground. However, Granby now has the appearance of a swansong where conventional air planning is concerned.

The overall function of the air campaign in coalition strategy was described by CINCCENTCOM in the following terms.

In order to attack a position that is heavily dug-in and barricaded such as the one we had here, you should have a ratio of five-to-one in the way of troops in favour of the attacker ... We were outnumbered as a minimum, three-to-two as far as troops were concerned ... In addition to that, they had 4,700 tanks versus our 3,500 when the build-up was complete, and they had a great deal more artillery than we do ... We had to come up with some way to make up the difference ... What we did was start an extensive air campaign.¹²

As we have seen, responsibility for the air campaign rested with Lieutenant General Charles Horner, the JFACC, who was also CINCCENTCOM's deputy. Horner exercised his authority through his Tactical Air Control System (TACS), the organisation, personnel, procedures and equipment necessary to plan, direct and control tactical air operations and co-ordinate air operations with other services and allied forces. Theoretically, these functions were the responsibility of Horner's headquarters and CAOC, which consisted of Combat Plans and Combat Operations divisions and produced the daily Air Tasking Order (ATO) that dictated all coalition air activity. However, in practice, the Combat Plans division was assigned only a limited planning role and chiefly concerned itself with joint plans for the defence of Saudi Arabia. For security reasons and because of the political sensitivity surrounding offensive operations, planning for the air campaign was assigned to an entirely

12. CENTCOM news briefing, Riyadh, 27 February 1991, published in Captain ME Morris, *H. Norman Schwarzkopf: Road to Triumph* (London, 1991), Appendix A, pp. 242-243.

separate organisation, the Special Planning Group (colloquially known as the 'Black Hole'). The Black Hole was not initially concerned with joint planning and conceived its task in strategic terms. It was to devise an offensive plan to achieve national and military objectives to *win* the war through air power alone, making a ground campaign unnecessary.

While this goal might appear ambitious, it was dictated at the strategic level and not by Horner and his senior planners. No alternative strategy could be considered until the American government took the decision to deploy the US Army and the Marine Corps to the Gulf on a scale large enough to permit the launch of a ground campaign. Only in October, when the number of US ground troops allocated to CENTCOM was doubled, could a ground assault be incorporated into offensive planning.

Brigadier General Buster Glosson ran the Black Hole and established a staff of 30-40 officers, who started planning from first principles. They comprised specialists with experience of the various roles, aircraft types and weapons systems, along with intelligence and logistics experts and planners from the other services. At first, there was a single RAF representative of wing commander rank; he was joined by an intelligence officer in November. Glosson isolated the following objectives:

1. Establish air superiority.
2. Isolate and incapacitate the Iraqi leadership.
3. Destroy Iraq's nuclear, biological and chemical warfare capability.
4. Eliminate Iraqi offensive military capability.
5. Eject the Iraqi army from Kuwait.

The planning staff divided the air offensive into four phases, each with its own set of objectives and time estimates, though the phases were not necessarily seen as discrete or sequential. Ultimately, once a ground campaign had been incorporated into coalition planning, the phases were as follows.

Phase 1 was termed 'The Strategic Air Campaign' and comprised a wide range of target systems. These included air defences, aircraft and airfields, strategic chemical, biological and nuclear capability, leadership targets, command and control, Republican Guard, telecommunications facilities and key elements of the national

infrastructure such as critical lines of communication between Baghdad and Kuwait, electric grids, petroleum storage and military production facilities. Phase 2 was 'Air Supremacy in the Kuwait Theatre of Operations' (KTO) and was to be initiated at about the same time as Phase 1. Phase 3, 'Battlefield Preparation', was intended to reduce Iraqi combat effectiveness in the KTO by at least 50 per cent; Phase 4, commencing three weeks into the air campaign, was to be conducted in conjunction with the ground offensive with the specific objective of liberating Kuwait, cutting key lines of communication into south-east Iraq, and destroying the Republican Guard.

As the planning process was refined, it became more concerned with particular types of target – command and control sites, Republican Guard forces, Scud missiles – than with phases, and the distinction between the various phases became less meaningful; but the 50 per cent attrition level for Phase 3 remained a key objective. It was assumed that the coalition would be called on to attack first, but there was an alternative defensive plan for the eventuality of an Iraqi offensive, and a 'reflex' plan providing for a transition from defensive to offensive postures.

Quite independently, at the beginning of September, DCDS(C) set up a Targeting Policy Cell in the MOD tasked with devising targeting philosophies and options that CDS could consult when advising ministers and directing the Joint Commander. The cell began its deliberations by considering the UK's strategic and military objectives and the possible circumstances in which offensive operations might occur. It went on to devise a range of targeting options governed by six basic considerations.

1. The target should contribute to the military operation's precise objectives in a manner that was necessary, proportional and relevant.
2. The target should be militarily significant.
3. Suitable weapons should be available to ensure that the aim was achieved.
4. Achievement of the aim should not result in unacceptable levels of attrition.
5. Targets prohibited by international law should be avoided; collateral damage, injury to civilians and the destruction of centres of cultural or religious significance should be minimised.
6. Iraq should return to a state of normality after the cessation of hostilities.

Finally, the planning team isolated fifteen target categories and subjected each to a detailed analysis in accordance with the foregoing criteria. By this means, they compiled a shortlist of priority target categories, defined as the target systems that would be most worthwhile attacking to wreak the greatest damage quickly on Iraq's war-fighting capacity for the least price in terms of effort and losses. The resulting Targeting Philosophy paper formed the basis of the Targeting Directive (TD) issued by CDS to the Joint Commander on 12 October, and the Joint Commander subsequently confirmed that the directive was well aligned with US planning and targeting work in the Gulf, which was subject to constraints virtually identical to those imposed on UK forces. It was also discussed in some detail with the Americans when DCDS(C) visited the Pentagon later in the month.

The directive identified seven primary military target categories:

1. Airfields
2. Missile systems
3. Military command, control communications and intelligence, headquarters facilities
4. Weapon storage and repair facilities
5. Other military activity
6. NBC production facilities
7. Defence-related industries – missiles and land arms

Authorisation to attack was delegated through the Joint Commander to UK commanders in theatre if targets within these categories were supporting Iraqi offensive action, the Iraqi occupation of Kuwait or Iraqi action against coalition forces. Such authorisation could also be assumed for planning purposes. The only exceptions were nuclear, biological or chemical warfare-related targets, which required higher approval. Otherwise, the following constraints and exceptions were imposed. Attacks were to comply with international law and were not to target sites of religious or cultural significance; they were to seek to minimise collateral damage, and commanders were to 'take all reasonable precautions to spare civilians from incidental harm' and 'minimise the risk to Allied hostages held in or near target areas'.

Beyond the basic delegations, a second list – Other Targets Supporting Military Operations – was prepared covering civil infrastructure:

1. Government control centres
2. Oil facilities – production, refineries, pumping stations
3. Civil electronic communications
4. Shipping
5. Water facilities, e.g., dams, treatment plants, irrigation
6. Ports and harbours
7. Electric power generation, transmission and control
8. Transportation, including bridges, roads, rail and rivers

Authorisation to attack targets within these categories was specifically withheld, and theatre commanders were to refer targeting recommendations upwards. The directive stated: 'If you wish to recommend that you be authorised to attack any such targets, your recommendation should specify how such an attack would assist the implementation of your objectives.'

COMCENTAF's target list grew from 84 entries in August 1990 to 477 by early January 1991. The UK was always at liberty to propose additional targets, but this proved unnecessary in practice. When the RAF representative in the Black Hole examined the list, he found that all locations that the RAF deemed worthy of attack were already included. The UK Air Commander could advise CENTAF on the targets best suited to the RAF's capabilities, and conversely, if he was unhappy about particular targets, he could dissent. But he could not dictate which targets the RAF should attack, nor did he ever attempt to do so. Nor did CENTAF allocate or identify particular targets as 'RAF targets'. The sum of the targets and the resources used against them were all combined into a single consolidated air campaign.

The CENTAF planners prepared a Master Air Attack Plan (MAAP) for the first 60 hours of the offensive, which was to be rigidly followed for the first 48 hours. Thereafter, planning was flexible enough to allow targets to be varied in accordance with early assessments of bomb damage and of the campaign's overall success. A similar pattern of planning continued in a rolling three-day sequence throughout the period of hostilities: as the MAAP for Day 1 was implemented, planning for Day 2 would be

finalised and translated into specific tasks in the ATO; meanwhile, planning for Day 3 was initiated. Today, this system might appear familiar; however, for most non-USAF coalition air forces, the RAF included, it was a novelty in 1990.

The cycle began at 0500 hours each day, when the JFACC's Guidance, Apportionment and Targeting (GAT) Group began constructing the MAAP for Day 3. The GAT Group would consider progress with the target list and the success of previous missions to determine how many new targets could be attacked and how many previous targets revisited. It would then produce target planning worksheets covering weapon-to-target matching, selection of impact points and weapon effort. At the beginning of Day 2, the MAAP was passed to the Air Tasking division, which was responsible for compiling the detailed ATO. Air Tasking collaborated with Airspace Control to ensure deconfliction before entering the tasking data into the Computer Assisted Force Management System, which was used to disseminate ATOs to tasked air force detachments.

ATO preparation was an exceptionally complex process. The CENTAF planning system was established to support a maximum of 2,400 sorties per day but more than 3,000 were envisaged by the tenth day of Desert Storm. Meticulous coordination was necessary given the scale of the operation and the confined airspace available: offensive aircraft would usually be flying at the same time as AWACS, tankers and aircraft committed to the suppression of enemy air defences (SEAD). For example, on the first day of the operation (17 January 1991), the ATO contained 75 force packages and covered 156 target arrays. It included 24 different types of attack aircraft, nine types of tanker, seven air defence types and three types of AWACS. It listed 382 combat sorties during its first six hours, supported by 299 tankers; 1,824 AAR hook-ups were to deliver 26 million pounds of fuel. At one stage, six layers of tankers would be flying – at night and in radio silence – each layer separated by only 500 to 1,000 feet. To complicate matters further, targeting was subject to constant revision throughout Day 1 and Day 2 of the planning cycle due to changing priorities, intelligence and BDA from the on-going air campaign.

In these circumstances, the pre-war aspiration to halt inputs into the ATO at 1400 on Day 2 proved unduly optimistic, as did the goal of transmitting it to force elements by 1800. Indeed, for the first three weeks, ATOs could emerge at any time between 1800

and 2100. This left little time to send the finished document to detachment level (particularly if there was no secure transmission link and the ATO had to be delivered by hand) and for the detachments to digest its contents, brief personnel accordingly and mount the sorties. Further complications resulted from the fact that ATOs were often changed after their initial transmission.

Ultimately, the TACS functioned satisfactorily during Operation Granby and proved that the centralised direction of an exceptionally complex theatre-wide campaign was possible. The task was facilitated by technological innovations, such as satellite communications, airborne command and control platforms like AWACS and JSTARS, realistic peacetime training and meticulous preparation in theatre during the Desert Shield phase of the operation. The difficulties were nevertheless considerable. Indeed, according to the official USAF historians,

The primary obstacle faced by the commanders of coalition Air Forces during Desert Storm was not Iraqi resistance but organizational problems within the Tactical Air Control System itself.

Four of these were particularly prominent. First, the need to update targeting plans continuously on the basis of previous results caused the GAT to extend its powers backwards into intelligence and forwards into air tasking, yet neither the intelligence, nor the tasking, nor the GAT personnel had trained for this eventuality; the efficiency of tasking suffered as a result. Second, the rapidity with which the air campaign developed and the speed with which modern intelligence-gathering assets could collect information outstripped established tasking procedures, raising questions about the efficacy of the ATO process. Third, decision-makers at various levels of the TACS frequently lacked the information they needed to direct the air campaign or did not receive it on time. For example, the TACC often struggled to supply timely BDA for the air campaign's planners. Fourth, a variety of interpersonal and jurisdictional problems arose from the creation of various *ad hoc* command and control organisations, which to some extent superseded established structures.

In short, while the Gulf War demonstrated that the means existed to direct air operations of extreme complexity and scope, technological and organisational

innovations designed to solve long-standing air C2 problems sometimes generated entirely novel challenges for air commanders to address.

6. Rules of Engagement

To integrate deployed RAF detachments into the multi-national coalition during Operation Granby, it was necessary to accept US direction in operational matters and planning for offensive action to liberate Kuwait. As we have seen, the Air Commander could not devise national plans for air operations or dictate how his forces were employed within the coalition. Instead, his task was to advise CENTAF on the most effective use of British assets and – as the so-called red card holder – ensure that they were not committed to operations for which they were unsuited, or which were contrary to British strategic objectives as defined by the government. To fulfil this role, he required unambiguous terms of reference from London. These were provided by his directive from the Joint Commander, by the TD and by the UK Rules of Engagement.

Considerable difficulties were encountered in framing workable ROE for Granby because of the need for harmonisation with the other coalition powers. Although the problems were soon resolved, for a time they threatened to halt RAF participation in air defence operations. After three decades of coalition warfare, this might appear to be a very familiar story. However, in 1990, the issue of cross-coalition ROE alignment presented entirely novel challenges to the commanders and staffs involved.

By their very nature, ROE seek to strike a balance. If they are too restrictive, deployed forces may find themselves impotent when confronted by a pre-emptive attack. If they are too liberal, they leave scope for action that may appear provocative or aggressive: a deployment intended to deter hostilities may inadvertently precipitate them. Efforts to achieve this balance may be identified in the declared objectives of the UK ROE for Operation Granby. They were designed ‘to deter further aggression by Iraq and, if necessary, to defend Saudi Arabia and other friendly states in the area as part of [the] multi-national effort’. The ROE had also to ‘recognise both the varied nature of the threat and the possibility of surprise attack’ and be framed in a manner that did not affect the inherent right of self-defence.

Difficulties arose in the Gulf following the arrival of the Tornado F3 detachment at Dhahran on 11 August 1990. At this early stage, there were no agreed coalition ROE, and deployed UK and US forces had little knowledge of each other's rules, the relevant documents being confined to exclusively national circulation. There were only rather vague preconceptions to the effect that British ROE tended to be more restrictive than American.

The Operation Granby ROE were first discussed at a Prime Ministerial meeting on 9 August at which it was agreed that the MOD would compile draft rules affecting both air and maritime deployments to the Gulf. Once prepared, these were approved by the Secretary of State for Defence. On the following day, the Assistant Under-Secretary (Commitments) briefed the Chiefs of Staff on ROE, drawing attention to the basic principles and features of British practice as then defined by Joint Service Publication (JSP) 398. Anticipating the deployment of a multi-national force, he emphasised the importance of consistency between the procedures of participating nations, while maintaining that ROE should ultimately be based on national documents and methodology. Summing up, CDS insisted that the necessary ROE be in place before the F3s reached the Gulf from Cyprus. The Joint Commander's directive instructed him to report back to CDS on the ROE position as a matter of urgency.

The Joint Commander immediately recognised that it would be difficult to maintain a national interpretation of ROE in a coalition environment. Absolute national control could hardly be exercised if decision making was partially ceded to other countries – even allies – and it seemed unlikely that British forces would be able to participate fully in coalition operations if they insisted on observing their own rules. He therefore confirmed that UK ROE were adequate for the F3s' transit flight from Akrotiri to Dhahran but advised the Director of Air Defence at the MOD that the rules were 'unworkable in an integrated allied AD system'.

We would need to harmonise them with the Saudis and Americans and recommend changes once we had established the AD and airspace management procedures in play.

Under the initial ROE, RAF fighters were constrained to apply national criteria to the categorisation of an intruder as 'hostile' and to the definition of a 'hostile act' before

they could respond. F3 crews were required to confirm that their target was an Iraqi military aircraft (effectively to identify them visually) and that it had committed or was clearly about to commit a hostile act. DCDS(C) had issued instructions that they were 'not to rely on a third party for identification of an Iraqi military aircraft'. His position was unquestionably influenced by the shoot-down of Iran Air flight 655 by the USS Vincennes in the Gulf just two years before, after the aircraft – an A300 airbus – was mistakenly identified as an Iranian Air Force F-14.

In the Joint Commander's opinion, this was impossible. Authorisation for engagement had to be issued by the Saudi sector commander at Dhahran after USAF or Saudi AWACS had classified the Iraqi aircraft as hostile. If the MOD refused to accept this stipulation, the F3s would be unable to take part in integrated air defence operations. They might then be marginalised or grounded, or perhaps even asked to vacate ramp space at Dhahran, which was at a premium because of the huge US build-up. The only alternative was for the F3s to operate in an air defence zone of their own, but the Saudis were naturally unwilling to allow another nation's aircraft to fly autonomously in their airspace. Harmonisation of the rules was thus imperative.

At the heart of the problem lay the twin issues of third-party identification and the criteria required before an aircraft could be classified as hostile. The caution underlying the UK ROE originated in concerns that US and Saudi AWACS might base their assessment of 'hostility' purely on the intruder's geographical position. Although subsequent information suggested that the US, like the UK, required clear evidence of a hostile act or hostile intent, the MOD continued to suspect that an Iraqi aircraft might be declared hostile purely because it had entered Saudi airspace. The proficiency of Saudi AWACS crews was also questioned in some quarters, fuelling fears that a friendly aircraft might be mistaken for an Iraqi intruder.

The issues were complicated by discrepancies between the US ROE being reported to London from Washington and those being applied in the Gulf. It eventually transpired that the ROE approved in Washington were those appropriate to a period of tension whereas, in the Gulf itself, CENTAF was applying the ROE for war; yet both Washington and CENTAF thought they were working to the same rules. The Saudis, for their part, were unaware of the mixed messages emanating from the US and mistakenly believed that London was entirely to blame for the deadlock. Considerable

time and effort were required to resolve this misunderstanding, which was a source of great frustration to the UK Defence Staff and their Saudi counterparts.

When the Chiefs of Staff met on 14 August, they received a gloomy assessment of the situation. The difficulties involved in framing acceptable ROE for the F3 detachment were proving insoluble and, in the absence of any agreement, they were not being tasked to fly on combat air patrol (CAP). The Chiefs were invited to consider whether the UK should insist on maintaining national ROE and risk exclusion from air defence operations or accept US/Saudi procedures and the possibility of being committed to action on potentially dubious legal grounds. It was agreed that efforts should continue within the MOD to determine the US position on ROE, while the Air Commander liaised with his opposite numbers in US CENTCOM and the RSAF to determine US and Saudi intentions. 'Every effort should be made to align British ROE with those to be adopted by US/Saudi forces.'

Ultimately, the Chiefs of Staff conceded that the F3s had been sent to Saudi Arabia with excessively restrictive ROE. Ministers were advised that 'the identification and declaration of a target as hostile by a third party was acceptable in principle, provided agreement could be reached on what constituted the word "hostile".' A further stipulation preventing RAF aircraft from flying within 25 miles of the Iraqi, Kuwaiti, Jordanian and Yemeni borders was also revised, the 10-mile limit observed by the US and Saudi Arabia being instituted instead.

At the same time, the RAF reached the conclusion that JSP 398 was too restrictive. As one source at JHQ put it,

ROE was drafted for dog-fight situation where pilot [was] required to manoeuvre into a restricted weapons envelope and to point the nose of his aircraft at the target; however, the high off-boresight capability of latest generation fighters means that shots can now be taken at all aspects ... As a result, the first shot may be taken at a much earlier opportunity than envisaged when JSP 398 [was] drafted, and there will be little need for persistent manoeuvring for the attacker to obtain a firing solution ... The more imminent prospect of hostilities has caused us to examine this ROE with a more critical eye and, as presently

worded, it is incompatible with the pilot's right to take timely action in self-defence.

A number of clauses within the JSP were therefore amended.

Meanwhile, the US authorities sought to clarify the position. By 18 August, the MOD had received a revised set of US ROE requiring that, before opening fire, US air forces should establish that an Iraqi aircraft had demonstrated an intent to commit a hostile act. The rules also confirmed that, for aircraft, the US definition of hostile *intent* was broadly equivalent to the standard British definition of a hostile *act*. US forces did not have permission to engage Iraqi aircraft simply because they had penetrated Saudi airspace. In other words, the US position was compatible with the basic principles underlying UK ROE for RAF detachments in the Gulf.

The American rules further disclosed that a range of exacting criteria had to be satisfied before an intruder could be declared hostile to US aircraft, including electronic interrogation, flight plan-position correlation, direction, course, speed and behaviour consistent with hostile intent, and activation of weapon system radar or electronic counter-measures. AWACS (backed by SIGINT and electronic intelligence (ELINT) from USAF RC-135s) was known to be more than capable of gathering the necessary information. Nevertheless, it was still necessary for the UK Air Commander to negotiate something of a compromise with his American and Saudi counterparts concerning the definition of hostile action, and the British understanding of what constituted a single, unitary, air formation had also to be revised.

With the compatibility of British and US definitions of 'hostile' firmly established, it was possible to insert a simple clause into ROE documents that effectively settled the issue:

The Air Commander has instituted procedures so that, of the tracks identified by third-party control agencies, only those which comply with the criteria for positive identification *and* hostile act are declared to UK units as having committed a hostile act.

As the UK Air Commander could not personally exercise his designated authority on a minute-to-minute basis, he briefed the RAF base commander and air defence commander at Dhahran to deputise. Either he or an officer of wing commander rank was to be present in the Dhahran air defence operations centre whenever RAF fighters were airborne. The Americans were to ensure that their AWACS controllers, particularly those on Saudi AWACS, were briefed on UK ROE, and RAF crews were directed to treat instructions to engage with a degree of caution. As an added safeguard, the UK Air Commander appointed a delegated air defence commander – another wing commander – at Riyadh to monitor air defence operations during any period on which he was unable to do so himself. This officer was to be present in the TACC whenever RAF F3s were on CAP and his task was to ensure strict adherence to UK ROE. He was delegated full authority for ROE matters in the UK Air Commander's absence.

Coalition ROE were by no means comprehensively aligned thereafter. Indeed, despite the apparent agreement on engagement criteria, the UK ROE did not permit the F3s to fire on targets beyond visual range purely on the basis that they had been declared hostile by the on-task AWACS. Nevertheless, these arrangements provided a working compromise, which not only catered for the ROE relationship between the UK and her allies but also for that between the MOD and the UK Air Commander. In practice, this compromise was achieved through a limited delegation of authority from London to specially appointed RAF personnel in Dhahran and Riyadh, who had effectively to judge each case on its merits. Beyond this, the F3 crews were also required to exercise exemplary knowledge and judgement in the application of UK ROE.

There were no further ROE problems of this magnitude during Operation Granby, but the rules had nevertheless to be reviewed on several occasions. For example, in December, there were signs that the Iraqis were preparing for a pre-emptive attack. To meet this contingency, CENTAF developed a so-called D-Day plan in which RAF offensive aircraft were involved, yet it transpired, when the plan was examined in London, that UK ROE would not permit RAF participation. The Joint Commander therefore proposed a number of changes to dormant ROE¹³ and sought authorisation

13. Dormant ROE are pre-approved ROE that do not become effective unless certain contingencies occur or certain operational milestones are passed.

for himself and the BFCME to activate the dormant ROE in the event of the D-Day plan's implementation; the issue was soon resolved along these lines. Following the outbreak of hostilities in January 1991, a discrepancy between UK and US ROE caused a temporary halt in the involvement of British Jaguars in operations against Iraqi naval vessels, but their missions were resumed after the US Navy confirmed that all aircraft tasking would comply with British ROE requirements. On occasion, it was necessary for the UK Air Commander to hold up the red card to prevent RAF aircraft from attacking particular targets, but he would later record that 'when this happened it was accepted without demur.'

The ROE issue illustrated again how, during Granby, the MOD could sometimes be insufficiently responsive to constantly changing circumstances in theatre. In the aftermath of the Cold War, it proved difficult to adjust to the tempo of live operations. Yet ROE can never be static in a developing crisis. They have to be continuously updated to reflect (and sometimes anticipate) the course of events. They are also not purely reactive: until the outbreak of hostilities, they provide one means of controlling the way in which a crisis develops and thus serve as an instrument of crisis management. To that extent, they represent a delegation of political authority and their adaptation may require ministerial action at very short notice. The ministerial machinery must therefore have the capacity to respond quickly and efficiently to ROE-related issues.

During December, the Joint Commander reached the conclusion that the MOD had been taking too long to clear ROE requests submitted from theatre through JHQ and alerted CDS to the problem. With hostilities imminent, he argued, commanding officers had to be confident that ministers were aware of the critical importance of ROE. Moreover, it was vital for the Secretary of State or his nominated deputy to be immediately available so that ROE changes could be sanctioned without delay. It is not clear that there was any great improvement as a consequence of the Joint Commander's representations. Proposals to create an ROE cell in the MOD's Joint Operations Centre were considered but not implemented. Fortunately, the difficulties that so concerned Air Chief Marshal Hine lost much of their significance following the launch of Desert Storm in January. The onset of live hostilities simplified many of the key issues and the ROE devised for this phase of Operation Granby had been very

carefully considered in advance. They proved to be robust and easily applicable, and there was consequently little need for further alteration.

7. Conclusion and Aftermath

The first and most obvious conclusion to be drawn from this survey of command and control during Operation Granby is simply that there was a considerable delay before command arrangements were finalised. The command structure established for Operation Corporate in 1982 was complete less than a week after Argentine forces landed on the islands. In August 1990, a Joint Commander for Granby was appointed within a similar time scale, but he was denied OPCOM of all British forces in the Gulf for more than a month. A JFC for the operation was only appointed some six weeks after the crisis began, and this first appointment was temporary. General de la Billiere only assumed his post as JFC on 1 October, and deliberations over the structure and function of his headquarters extended into November.

How can this be explained? When Operation Granby began, Royal Navy vessels were already positioned in the Gulf for the Armilla Patrol. Yet the first detachments dispatched under the auspices of Granby were exclusively drawn from the RAF. For this reason, C2 was at first exercised by two separate chains, one subordinated to the Joint Commander, the other to CINCFLEET. Command was only properly unified in September following some protracted wrangling between the Chiefs of Staff.

There were strong arguments both for and against the creation of a single chain of command for Operation Granby. The established British OOA C2 procedures assumed that deployed forces from the three services would function as an integrated national component under the OPCON of a single JFC in theatre, responsible in turn to a Joint Commander in the UK; but in the Gulf crisis it quickly became clear that the services were to function with a considerable degree of independence from one another. Coalition strategy linked RAF force elements with other coalition – chiefly American – air forces rather than British ground forces, and the USAF began planning an offensive air campaign that was at first designed to make a ground offensive unnecessary. Although the Land Component was subsequently assigned a more prominent role, this change was only initiated in October 1990, and the additional

forces required did not deploy until November. Even then, the air campaign was substantially intended to precede rather than accompany ground operations.

There was arguably more integration between air and naval forces during the Gulf War in so far as carrier-borne aircraft contributed to the air campaign. However, during the Desert Shield period, naval vessels were chiefly engaged in the largely independent function of enforcing the UN trade embargo against Iraq. The Royal Navy, lacking carrier-based offensive aircraft and sea/submarine-launched cruise missiles, could only contribute to second of these roles and was again tasked separately from other British forces (except, in certain circumstances, RAF maritime patrol aircraft). In short, far from Operation Granby being joint at a national level, all three British components in the Gulf functioned separately. To that extent, the need for an integrated tri-service headquarters in theatre was questionable.

Nevertheless, there were overwhelming practical arguments favouring the appointment of a JFC in the Gulf with OPCON of all deployed British forces. Air Chief Marshal Hine proposed creating a single command chain first because he feared that hostilities were imminent, second to secure the UK a seat at CINCCENTCOM's Component Commanders Committee and third because it was unreasonable to expect General Schwarzkopf to work through two separate British command structures. Hine's position was in no way dogmatic, however. With a single chain established, he recognised that a marked departure from textbook joint C2 procedures was required. Thus, he readily agreed to the delegation of many of the JFC's OPCON functions to the Royal Navy's CTG, and, when General de la Billiere assumed his duties as JFC, there remained scope for him to delegate day-to-day RAF OPCON functions to the Air Commander in a similar fashion. By that time, the US component system was already allowing participating RAF detachments to be incorporated into the coalition with relative ease, leaving the UK Air Commander and his staff to exercise a supervisory, consultative and supporting role. Primary air C2 planning and execution functions were exercised by the Air Component Headquarters and the CAOC.

Ultimately, then, the C2 structure had to serve a dual purpose. First, it had to secure the British JFC the all-important status of Component Commander; second, it had to cater for the relative separation of deployed British forces within the allied coalition. It was successful in both respects. Indeed, the system of divided OPCON functioned

very effectively, and relations between the JFC and his force commanders were both cordial and productive. Beyond this, the Granby C2 structure achieved the unity of command that had proved so elusive eight years earlier in Operation Corporate.

At the next level of the command structure, according to a contemporary assessment, 'the relationship between JHQ and HQBFME was excellent, and while on occasion there were genuine differences in ... military perceptions, these were soon resolved and at no time affected the timely conduct of activity.' Isolated difficulties also occurred when UK-based formations dealt directly with detachments in theatre, bypassing JHQ, and there were some more practical problems, such as the provision of sufficient CIS. But these were probably inevitable given the nature and scale of the operation, and the fact that it was completely unexpected. In time, solutions were generally found. In the subsequent judgement of the Joint Commander and the JFC, 'Operation GRANBY has more than validated the JHQ/JFHQ model.'

By contrast, working relations between JHQ and the MOD could clearly have been better. The Secretary of State, requiring a continuous supply of the latest information from the Gulf, came to believe that it was accumulating needlessly within JHQ. As the United States appeared to have no equivalent organisation between Riyadh and Washington, he suggested that JHQ might be removed altogether from the command chain, mistakenly equating information supply with command and control. Although Mr King subsequently recognised that JHQ was necessary – a conclusion unanimously endorsed by the various post-operation Lessons Learned documents – he remained dissatisfied with the formal briefing arrangements established in response to his criticisms. JHQ, for its part, felt that the MOD was demanding too much information and was maintaining slow and bureaucratic procedures that were unjustifiable during a major conflict. While the evidence ostensibly supports JHQ's complaints, history suggests that some friction between operational commands and the centre is inevitable in wartime. Mere organisational changes would not have eradicated the problem completely but might perhaps have alleviated it.

For RAF force elements to be fully integrated into the coalition, it was necessary to cede some C2 functions to the US JFACC, Lieutenant General Horner, and this would not have been feasible without compatible British and American ROE. Nevertheless, it is true to say that the first RAF detachment arrived in theatre with unworkable ROE,

despite clear and timely warnings from JHQ to the MOD. The difficulties subsequently encountered in agreeing workable ROE for defensive counter-air did not all originate in the UK, however, and were probably to be expected in a multi-national operation beyond the NATO area. Solutions were rapidly found, but the onset of limited hostilities during the third week of August 1990 might have placed the F3 detachment in a very awkward position. The principal RAF Lessons Learned document prepared in the aftermath of Operation Granby recorded:

Differing Rules of Engagement for air defence forces complicated the development of airborne procedures in the opening stages of the crisis. ROE are a crucial area in Transition to War, particularly in a coalition operation; a better understanding of the ROE systems of potential Out of Area allies, in particular the US, is required.

On the other hand, the RAF's integration into the coalition's offensive air campaign plan was relatively straightforward, any doubts over the compatibility of British and US targeting criteria being quickly dispelled.

The JHQ system was not immediately reviewed after Operation Granby. Indeed, the Defence Staff at first expressed full confidence in the status quo.¹⁴ Yet the MOD ultimately decided to establish PJHQ at Northwood. From the RAF's perspective, difficulties staffing both JHQ and the UK Air Headquarters with trained C2 personnel in Granby led to the overhaul of the Air Battle Management Course by the new Air Warfare Centre at RAF Waddington, and continuous No-Fly Zone operations in the Gulf and over the Former Yugoslavia also allowed personnel to accrue more operational C2 experience. Yet it was increasingly considered that more far-reaching measures were necessary. A working group established by ACAS and the Assistant Chief of the Defence Staff (Operational Requirements (Air)) concluded in October 1994 that the UK's air C2 structure was

fragmented, incomplete and inadequate for the coherent command and control of modern air warfare in a changing and unstable world. The absence of formed air C2 entities, and trained personnel to man

14. CDS 3/92, Command and Control at the Higher Level, 12 May 1992.

them, capable of rapid deployment overseas to form the air component of a JFHQ, was seen as a major weakness.

The report went on to argue that the US JFACC concept had proved itself during the Gulf War and had since been embraced by NATO.

The JFACC concept would also meet the UK's national needs and it would therefore be sensible for the RAF to adopt it, and to design the national deployable Air HQ (AHQ) to support it. Such an AHQ would have a staff element to support the JFACC, and an embedded Air Operations Centre (AOC) to plan and oversee the conduct of the battle ... The AOC should be termed a CAOC.

The proposed CAOC structure envisaged the two basic divisions employed by equivalent US organisations – Combat Plans and Combat Operations.

The Air Force Board Standing Committee approved these recommendations in the following year, and the UK CAOC finally came into existence in 1997. However, it was not at first tasked or equipped for deployed OOA operations and only developed a limited deployable capability through low-level initiative rather than higher command guidance. Instead, for deployed operations, it was still envisaged that a UK Air Headquarters would be established by the AOC 1 Group and his staff – effectively the same system used in Operation Granby. It was only in 1998 that a deployment requirement for the CAOC was confirmed by the AOC-in-C HQSTC to support the UK's new Joint Rapid Deployment Force – subsequently replaced and substantially augmented by the Joint Rapid Reaction Force (JRRF) concept following the Labour government's Strategic Defence Review. Proposals to develop the UK CAOC into a deployable Joint Forces Air Component Headquarters (JFACHQ) emerged early in the following year.¹⁵

15. Wing Commander Redvers T.N. Thompson, 'Post Cold War Development of United Kingdom Joint Air Command and Control Capability', *Royal Air Force Air Power Review* (Winter, 2004), p. 78.

APPENDIX 1

Memorandum of Understanding between the Government of the Kingdom of Saudi Arabia and the Government of the United Kingdom of Great Britain and Northern Ireland Concerning the Deployment of UK Forces.

The Government of the Kingdom of Saudi Arabia and the Government of the United Kingdom of Great Britain and Northern Ireland, pursuant to close and longstanding ties and as a result of the present unsettled conditions in the Gulf area, which threaten the security and safety of Saudi Arabia, and in recognition of the grave breach of the peace of the region and of the United Nations Security Council Resolutions 660, 661, 662, 664 and 665 have reached the following understanding:

1. At the request of the Government of the Kingdom of Saudi Arabia, the Government of the United Kingdom is deploying forces to the sovereign territory of Saudi Arabia, in the exercise of the inherent right of individual and collective self-defence recognised in Article 51 of the United Nations Charter.
2. The purpose of the United Kingdom Forces in Saudi Arabia under this Memorandum of Understanding is to counter the threat of aggression to Saudi Arabia and preserve the territorial integrity and the political independence of the Kingdom of Saudi Arabia.
3. The United Kingdom Forces will depart from Saudi Arabia when requested to do so by the Government of Saudi Arabia.
4. The Government of the United Kingdom likewise reserves the right, after consultation with the Government of Saudi Arabia, to withdraw its forces from Saudi Arabia but confirms that it will not do so on less than one month's notice, except in case of emergency.
5. The United Kingdom Forces in Saudi Arabia will remain under national command but will act in accordance with the overall strategic guidance of the Supreme Commander of the Saudi Arabian Armed Forces.

6. The initiation of combat operations outside the territory of the Kingdom of Saudi Arabia by United Kingdom forces deployed under this Memorandum of Understanding will be the subject of a joint decision.

7. The Government of Saudi Arabia will make facilities available for the United Kingdom Forces in Saudi Arabia.

8. United Kingdom Forces in Saudi Arabia will respect the laws, regulations, customs and traditions of Saudi Arabia, and will have a duty not to interfere in the internal affairs of Saudi Arabia.

9. The members of the United Kingdom Force, including civilian employees of the Government of the United Kingdom sent to Saudi Arabia in its support, will enjoy the same immunities, notably from the civil and criminal jurisdiction of Saudi Arabia, as are enjoyed by members of the administrative and technical staff of a Diplomatic mission.

10. The United Kingdom Force and its members, including civilian employees of the Government of the United Kingdom sent to Saudi Arabia in its support, may import into Saudi Arabia without licence or other restriction or registration and free of customs, duties and taxes, equipment and other supplies required by the force for the purpose of its operations in Saudi Arabia together with the personal effects of and items for the personal consumption or use of members of the force. Any property of any kind imported entry-free under this paragraph which is sold in Saudi Arabia to persons other than those entitled to duty free import privileges will be subject to customs and other duties on its value at the time of sale.

11. Neither government will make any claim against the other, or against the armed forces personnel or associated government officials of the other, for damage or injury caused by their acts or omissions in the course of their duties. Each government will be responsible for dealing with claims raised by its own citizens or residents.

12. The two governments will establish a joint consultative mechanism to ensure the implementation of this agreement.

13. This Memorandum of Understanding will come into effect upon the date of signature. In the event of the withdrawal of the United Kingdom Forces under paragraph 5 or paragraph 6 of this Memorandum of Understanding, this Memorandum of Understanding will terminate with the exception of paragraph 11, on the departure of the last element of the United Kingdom Forces from Saudi Arabia.

APPENDIX 2

Extract from CDS 13/92, Report by the Granby Co-ordinator, Lessons Learned from the Gulf War, prepared by Air Chief Marshal Sir David Parry-Evans, 9 December 1991.

28. It is, of course, fundamental that military operations are undertaken in pursuit of policy established by Ministers, and that ultimately all military activities are conducted under political control. The level and extent of political supervision will depend on the nature of the operation and on Ministerial requirements. Ideally it should be as little as possible but as much as necessary: the guiding principle should be that Ministers establish the objectives and the overall policy framework within which military commanders execute operations. In practice, the division of responsibility may not be so clear-cut; in particular, in the run-up to operations or where the international dimension is complex – as it was here – Ministers may see a greater need for political control than military commanders would like.

29. There is however no doubt about the executive responsibility of the Chief of the Defence Staff. Similarly, the responsibilities of the Deputy Chief of the Defence Staff (Commitments) are clear, and his Directive from CDS states in part ‘as my Director of Operations, to co-ordinate and direct all operations and major exercises other than those delegated to single Services or subordinate Commands’. DCDS(C) performs that task through the Defence Operations Executive which is charged ‘to act as the executive agency for the central direction of operations on behalf of CDS both when operations appear imminent and during their progress’ and further ‘to ensure that the appropriate political departments are consulted during the planning, mounting and execution of operations ...’. Unease has been expressed, however, about the relationship between the Ministry of Defence and the Joint Headquarters, and the Joint Commander has noted that he sometimes felt that he had ‘been given responsibility without the associated authority’, and that ‘at times the political imperative (as seen from MOD) appeared to delay or obfuscate sound military judgement.’

30. There is necessarily tension between, on the one hand, the military requirement to be able to conduct operations unfettered within a clear policy framework and, on the other, the Ministerial requirement to be satisfied that military activities are conducted

in a way which takes account of the full range of political considerations. The level and extent of political supervision will depend upon the nature of the operation and on Ministerial requirements. Clearly, the political dimension in Operation GRANBY was complex, and it would seem that Ministerial calls for detailed information inevitably drew MOD staff (Service and Secretariat) into matters that were arguably more properly the concern of the Joint Headquarters. That, at any rate, appears to have been the perception of the Joint Commander. In all this, it seems clear that there were misunderstandings and frustrations in the MOD/JHQ relationship, and there were also undoubtedly personality clashes. It is easy to understand the frustration of a Joint Commander, having been given his Directive, wanting to get on with it.

31. I am sure that strong and appropriate Defence Secretariat representation at the JHQ in future similar crises would be a most useful step forward. Suitable staff should be nominated for such appointments and they should participate in OOA exercises in, for example, the PURPLE series.