



The Royal Air Force and UK Air Power over Iraq and Kosovo, 1997-2000

Air Historical Branch



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General Introduction

This book brings together two studies prepared consecutively by the Air Historical Branch between 1999 and 2002. Of the two conflicts considered within its pages, the Kosovo war of 1999 will be the more familiar to the reader. It was, after all, a high-intensity operation conducted under the glare of publicity for two and a half months on the European continent; it was also the first combat operation executed entirely under NATO auspices. By contrast, many students of air power now struggle to define the operation name 'Bolton'. Only the very brief high-intensity period of Bolton – the US-led Operation Desert Fox – and the enduring low-intensity coalition Southern Iraq no-fly zone (NFZ) operation name Southern Watch are more immediately recognisable.

Addressing these operations in tandem allows for comparisons and contrasts to be applied throughout – an approach more informative than reading the two studies in isolation. Inevitably they have much in common. For example, they both occurred during Tony Blair's first Labour administration, which came to power in May 1997 after almost two decades of Conservative rule. International relations had witnessed several years of upheaval since the end of the Cold War. Despite confident expectations of a substantial 'peace dividend', conflict became more familiar – not less. The first Gulf War (the UK Operation Granby) erupted in 1990 and NFZs were subsequently established over northern and southern Iraq. Yugoslavia descended into a bloody civil war, leading to the creation of another NFZ over Bosnia and peacekeeping measures on the ground under combined UN and NATO leadership. Overt hostilities eventually broke out in August 1995, when Operation Deliberate Force was launched against the Bosnian Serbs.

The question in 1997 was whether this trend would change significantly or continue under a Labour government. In the event, if anything, it intensified. In addition to the ongoing NFZ missions, the British armed forces were committed to action in Iraq from 1998 onwards, Kosovo (1999) and Sierra Leone (2000). The pattern was extended after Mr Blair's re-election, Operation Veritas being launched in Afghanistan in 2001; the second Gulf War followed in 2003. Of the three British armed services, only one, the RAF, participated in all these operations and was subject throughout to the resource pressures and multiple risks involved. Some 158 aircraft were sent to the Gulf in 1991, and tens of thousands of sorties

would later be flown in support of the Iraqi and Yugoslav NFZs. RAF involvement in Kosovo, Sierra Leone and Afghanistan occurred alongside the drawn-out NFZ commitment.

Beyond this, however, Labour had an election manifesto pledge to initiate a Strategic Defence Review (SDR) on coming to power. Launched in May 1997 and published in July 1998, the SDR made several assumptions concerning the nature of future UK military commitments. These were based on detailed consultations that extended across government and the military and into academic and other research institutions. SDR envisaged that 'most future operations will be conducted by joint forces composed of fighting units from individual Services.' In other words, they would involve the combined action of two or more armed services. It was also expected that future operations would predominantly be of a deployed or expeditionary character. The Review sought to prepare UK defence to mount a single full-scale operation such as Operation Granby, or two smaller operations that would not both involve warfighting and would not be maintained simultaneously for longer than six months. This latter scenario might have meant, for example, a warfighting operation of no more than six months' duration being sustained alongside a longer (or 'enduring') non-warfighting operation.

The two operations considered in this book provided the first opportunities to compare the theory of SDR with the reality of the Blair government's foreign and defence policy. Broadly, they lent their support to the case for expeditionary capabilities but raised important questions regarding the other fundamental SDR assumptions. Operation Bolton only ranked as 'joint' for a brief period when a carrier-borne Harrier force was positioned in the Gulf, but the Harriers were never employed operationally against Iraq. Similarly, during the Kosovo conflict, a carrier was dispatched largely for presentational purposes and the Harrier FA2s on board did not make a significant contribution to the air campaign. Otherwise Bolton and Kosovo were assigned entirely to the RAF. They were not joint operations and they provided little or no opportunity for the British armed forces to develop joint operational doctrine or capabilities. Of particular note, western governments – the UK included – were very reluctant to deploy ground forces in this period. Instead, their preference was to pursue strategic aims by combining air power and diplomatic pressure.

Equally, while Kosovo conformed to the concept of a small-to-medium scale warfighting operation of less than six months' duration, Bolton had by 1999 developed into an enduring

warfighting operation and was being maintained alongside Operation Warden – the RAF's contribution to policing the northern Iraq NFZ. During the period when these three operations were being conducted simultaneously, and in the following years, the strategic assumptions that underpinned SDR were clearly exceeded. This was fully acknowledged by the Defence White Paper published in 2003, although it would prove no easier to align strategic assumptions and defence activity thereafter.¹

In other respects, too, it is informative to bring these two histories together. Both involved operations by western nations against so-called 'pariah' states – Iraq and Serbia – in circumstances in which the United Nations (UN) was unable to function as an effective instrument of crisis resolution, and both testified all too clearly to the difficulties faced by the UK and her allies in their attempts to exercise a policing role in the post-Cold War world. While western countries sought to operate within the accepted norms of international behaviour, they were confronted by two regimes that had no interest in doing so, both of which could count on at least some support within the UN Security Council.

Another similarity is that neither Bolton nor Kosovo could be considered doctrinally conventional. While RAF perspectives had been incorporated into NATO doctrine in the 1970s and 80s, the publication of AP 3000, *Royal Air Force Air Power Doctrine*, in 1990, represented the Service's first independent excursion into the doctrinal field since 1964. However, in considering the employment of combat air power, AP 3000 used a terminology that would have been all but impossible to apply to either operation. Perhaps the most relevant statement appeared under the Strategic Air Offensive heading and concerned what was described as 'political signalling'.

The threat, or the use of, conventional strategic air offensive action provides governments with a flexible and responsive instrument of crisis management. It can be used, as a means of signalling political intentions, either independently or in conjunction with other force elements ... It could also be used to deter impending aggression, signal resolve, threaten escalation, demonstrate friendly capabilities or eliminate specific enemy capabilities.²

The AP also suggested that strategic air power could be employed in so-called 'punishment operations'.

Beyond this, the NFZ concept was entirely absent from the AP and anti-surface force operations were deemed to be part of a 'truly joint campaign' in which 'the different force elements operate together synergistically, offering each other mutual support to achieve objectives.'³ It also stated that 'anti-surface force action works best when used in direct cooperation with friendly surface operations, where the enemy is forced to expose and attempt to manoeuvre his forces while under fire.'⁴ RAF operational doctrine did not anticipate the possibility of an independent air operation against surface forces on the Kosovo model.

By the time the Air Warfare Centre (AWC) published a doctrinal manual of its own in 1996 entitled *Royal Air Force Air Operations*, the three NFZs had been maintained for several years. Nevertheless, although the manual discussed peace support operations at considerable length, its consideration of NFZs extended to just a single line on 'airspace control' measures that might include air exclusion zones, air policing and combat air patrols.⁵ Anti-surface force operations were again expected to be joint. The manual declared that 'Air interdiction must be conducted in concert with the land force battle for optimum synergy.' Other concepts such as Battlefield Air Interdiction and Close Air Support) were defined by 'the proximity of targets to friendly forces and the control arrangements which are therefore required.'⁶ Like AP 3000, the manual did not envisage a situation in which land forces were entirely absent. This divergence between operational doctrine and practice could be viewed positively. In a sense, by moving into doctrinally uncharted territory, air power was demonstrating its inherent flexibility. Yet, as doctrine is founded on experience and accumulated wisdom, it is dangerous to ignore. Moreover, a significant divergence between doctrine and practice may leave the armed forces poorly prepared for the missions they are required to carry out.

In the command and control sphere there are also some obvious parallels. The exceptionally close bond between the RAF and the United States Air Force (USAF) that endures to this day originated in the conflicts of the 1990s. Granby provided the RAF with its first live operational experience of modern USAF doctrine and operating procedures, defined especially by such command and control provisions as the Combined Air Operations Centre

(CAOC), the Air Tasking Order (ATO) and the processes used to generate it, and the Airspace Control Order (ACO). The RAF gained further experience of USAF command and control as the decade wore on, a fact underlined by the creation of the UK Air Operations Centre in the later 1990s, which led in turn to the establishment of the Joint Forces Air Component Headquarters (JFACHQ) in 1999. By that time, no other American ally was so familiar with the USAF way of warfare, but Bolton and Kosovo would illustrate not only the scope but also the limitations of the Anglo-US relationship.

In the UK, joint command and control provisions were overhauled in the 1990s. At the beginning of the decade, UK C2 procedures for out-of-area operations were founded on principles that were both national and joint, with command in theatre assigned to a Joint Force Commander operating from a deployed headquarters. At home, the Chiefs of Staff would delegate command to a JHQ located either at Headquarters Strike Command or at CINCFLEET Headquarters, Northwood. The capacity of both headquarters to fulfil this function was tested annually in live or command-post exercises.

The Joint Headquarters system was not immediately reviewed after Operation Granby. Indeed, the Defence Staff at first expressed full confidence in the status quo. Nevertheless, a procedure that involved the periodic establishment of a Joint Headquarters to provide national C2 during specific crises such as the Falklands Conflict or the first Gulf War was obviously unsuited to a situation characterised by multiple, simultaneous or enduring operations. For this reason, the Ministry of Defence (MOD) ultimately decided to establish the Permanent Joint Headquarters (PJHQ) at Northwood. At the same time, the Defence Crisis Management Organisation (DCMO) was formed within the MOD, and a number of responsibilities were transferred from the department to the new headquarters. In future, the MOD would concentrate on policy formulation and the provision of strategic guidance. PJHQ was inaugurated in April 1996 and thus inherited the two Iraqi NFZ missions and the peace implementation task in Bosnia. However, the first two warfighting operations mounted under PJHQ command were Bolton and Kosovo.

At the tactical level, these two studies also reveal the extent to which the RAF – particularly RAF combat air power – was stretched in the later 1990s. During the course of this single decade, UK defence spending was slashed from 3.9 per cent of GDP to 2.6 per cent – a reduction of one third in just ten years. For the RAF, this was an era of base closures,

squadron disbandment and redundancies. At the beginning of the decade, the RAF's trained strength exceeded 83,000 personnel; by 1997 this figure had been reduced to 54,000 and it fell to 51,000 during the Bolton and Kosovo period. The RAF had 28 fast jet squadrons in 1990 divided between the strike/attack, offensive support, air defence and reconnaissance roles. By 1997 there were 22. The offensive air element fell from 16 in 1990 to 11 in 1997, and 10 in 2000.

The rush to cut defence spending is entirely understandable given the removal of any strategic threat to Western Europe in general and the UK in particular, but the reductions were implemented by politicians, officials and military chiefs who inevitably struggled to understand a global security environment in which there was no longer any challenge from the Warsaw Pact and the extent to which it would generate an increased operational demand for air power. The tendency was to underestimate the resources that would be needed to confront emerging threats. Hence, the apparent contradiction between the continuous front-line reductions and the fact that the RAF was committed to operations throughout this period. It is a paradox that explains why the defence climate of the 1990s was one of stringency and why there was far less scope than might be imagined for using cuts in front-line strength to fund capability improvements and realise the 'smaller but better' aspirations expressed by defence ministers.⁷

The consequences were examined in another AHB study that considered the lessons identified by the RAF from Operation Granby and the extent to which they were exploited. It concluded, among other things, 'that the funding cuts impeded the introduction of some Gulf War lessons'.⁸ Some identified lessons were not implemented before they were relearnt over Kosovo and Iraq at the end of the decade, some elicited only a slow or partial response, and others failed to secure the necessary funding or prioritisation. Recommendations for improving the UK's capacity to provide logistical support for extended or concurrent overseas commitments had not been fully implemented by the time SDR was undertaken. Some aircraft enhancements introduced during Granby were made permanent in the mid-1990s, but certain capability initiatives concerning, for example, anti-armour munitions, electronic warfare equipment and secure communications had yet to deliver at the end of the decade, and an identified dependence on the United States for the suppression of enemy air defences (SEAD) had not been addressed at all.

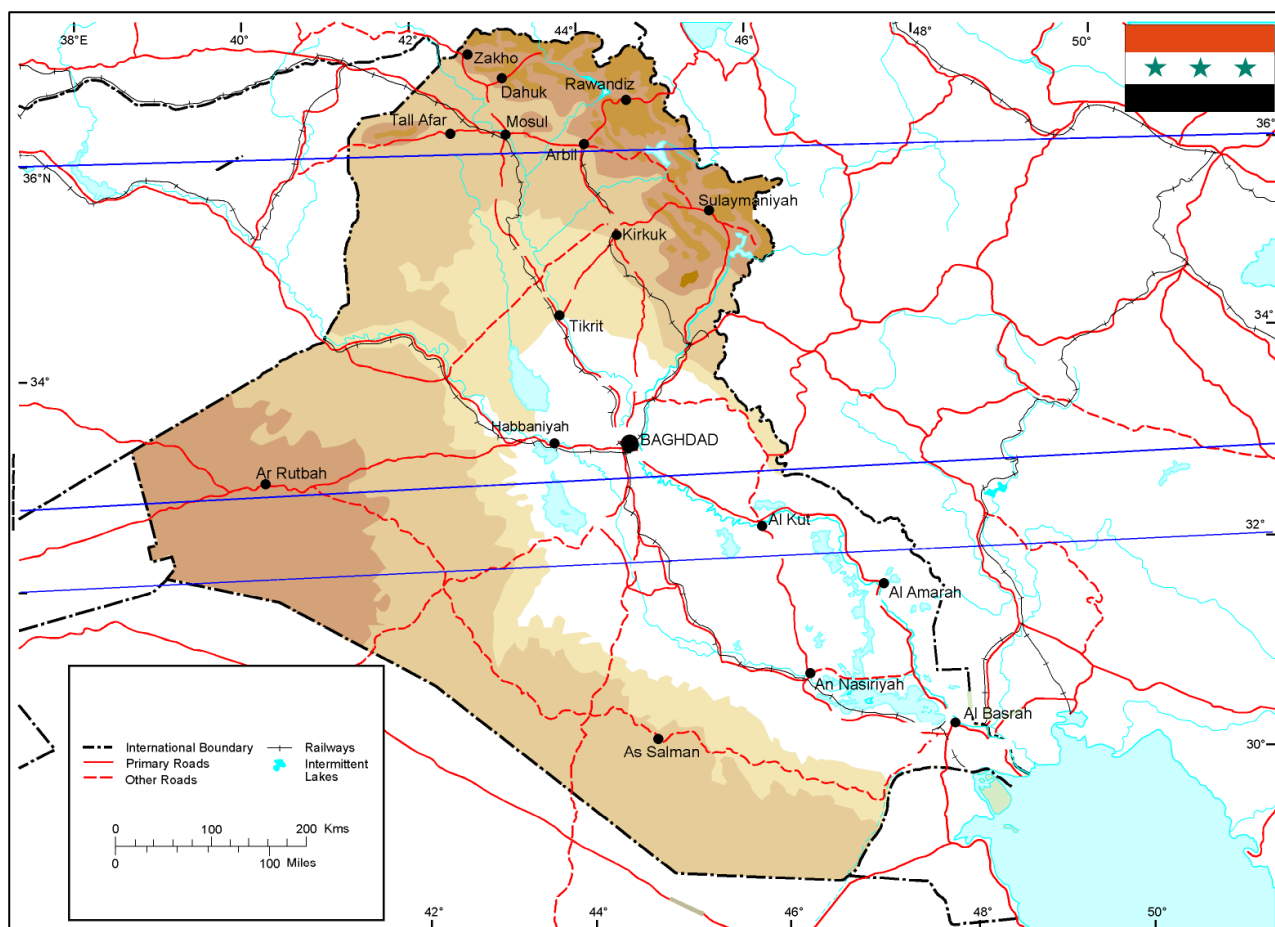
Most noteworthy of all, the 1990s transformation of offensive air tactics – the shift from lower to medium altitude flying and precision-guided bombing – had to be accomplished within rigid financial limits, with predictable consequences at squadron level. The RAF became entirely dependent on a single type of laser designator known as the Thermal Imaging Airborne Laser Designator (TIALD), and TIALD pods originally intended for the Tornado GR1 alone were then divided between the GR1, Harrier and Jaguar fleets as it became necessary to share the burden of operational deployments in the Gulf and the Former Yugoslavia across all three forces. Yet, at the end of the decade, ten years after Iraq invaded Kuwait, the UK Defence Procurement Executive advised the House of Commons Select Committee on Defence that a total of only 23 TIALD pods had been purchased.⁹ At a time when targeting constraints were becoming more stringent than they had ever been and when the UK was more likely to employ laser-guided Paveway II bombs against her adversaries than any other weapon, this remarkably limited acquisition can only be deemed a false economy.

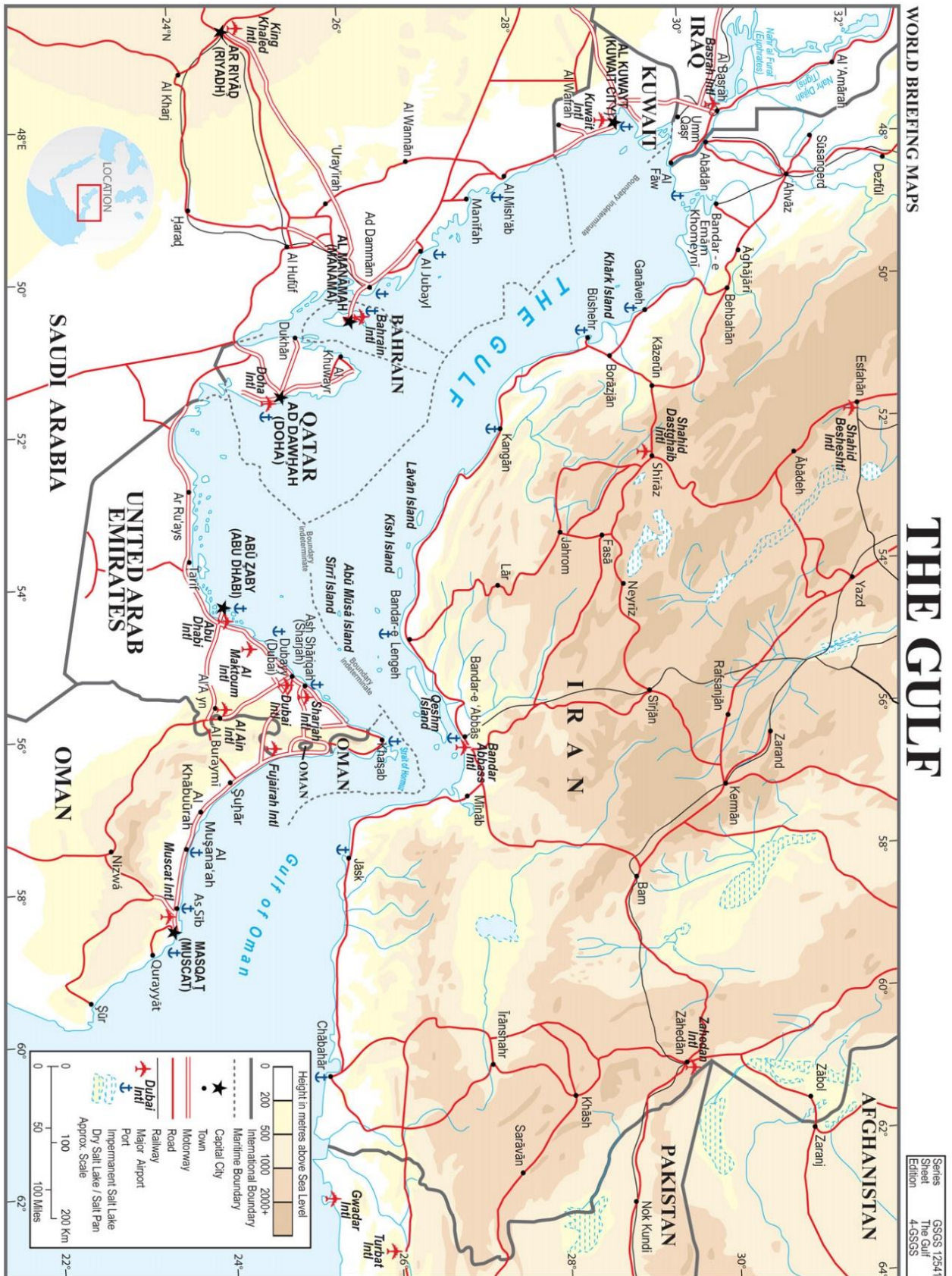
While the Kosovo and Bolton operations had much in common, there were also some important differences between them, extending far beyond the geographical separation of the former Yugoslav and Iraqi theatres. Although both were effectively subject to US leadership, one involved a US-led coalition while the other was mounted by NATO. They were thus conducted within very different parameters. In Bolton, the constraints were chiefly diplomatic in nature, relating particularly to the role of the United Nations. In Kosovo, the diplomatic process was no less sensitive, but the military sphere was rendered more complex by the internal workings of the alliance and the number of participating nations.

A second obvious contrast concerned the nature of the two conflicts. Kosovo was a high-intensity operation. It had to be sustained for considerably longer than NATO originally expected, but it was of finite duration and it was mounted in pursuit of clear and measurable objectives. The operation ceased when they were ultimately attained, and the outcome was favourably assessed by the British government. By contrast the early stages of Bolton essentially involved air presence – albeit on a significant scale – and the subsequent high-intensity warfighting period of the operation endured for only a few days. Moreover, its objectives were not well defined. Bolton then became an enduring low-intensity warfighting commitment with an open-ended goal – the containment of Iraq. Such a situation was by no means welcome in Whitehall, as we shall see.

The 1990s could reasonably be characterised as the decade of air power. From the first Gulf War onwards, it was a decade in which air forces consistently played the lead role in military operations. This contrasted very sharply with the first decade of the 21st century, with its drawn-out commitment of 'boots on the ground' in Iraq and Afghanistan. This book provides a basis for assessing the strengths and weaknesses of air-based approaches. It helps to explain why the governments of the day placed their faith in air power and what they expected it to achieve, and it considers the problems encountered, the solutions adopted, and the degree of success attained. Many of the key issues raised during the Kosovo and Bolton operations gain greater clarity and meaning from being addressed together; where this study is concerned, the whole really is greater than the sum of its parts. The many and varied lessons contained within its pages appear all the more relevant in a period of renewed dependence on air power, first in operations over Libya, more recently in the campaign against Daesh in Iraq and Syria.

Iraq, illustrating the Northern and Southern NFZs





PART 1

THE ROYAL AIR FORCE IN OPERATION BOLTON, IRAQ, 1997-2000

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General Introduction

The first part of this book surveys the RAF's role in Operation Bolton, the UK operation initiated in response to the so-called UNSCOM crisis from 1997 to 2000. Its central focus is the particularly close interaction between diplomacy and the application of air power over this three-year period. During Bolton, the UK and the United States attempted to use the threat of aerial bombardment to coerce Saddam Hussein's regime in Iraq into co-operation with the United Nations Special Commission (UNSCOM), which had been established after the Gulf War in 1991 to supervise the elimination of Iraqi weapons of mass destruction (WMD). Their efforts culminated in the brief operation against Iraq known as 'Desert Fox', conducted in December 1998.

Operation Bolton followed directly on from Operation Jural, the UK contribution to the coalition operation entitled Southern Watch – the enforcement of the NFZ over southern Iraq. For the RAF, the Bolton period was characterised by frequent reorganisation and redeployment, contrasting markedly with the relative equilibrium that prevailed in the Gulf between 1992 and 1997, and again between 2000 and 2003. This caused many challenging personnel and fleet-management problems. Until the UNSCOM crisis, the basic RAF contribution to Southern Watch involved six Tornado GR1s based initially at Dhahran in Saudi Arabia and then at Prince Sultan Air Base, Al Kharj (PSAB). However, during the UNSCOM crisis, they were augmented by a detachment of carrier-borne Harrier GR7s, and more GR1s were deployed to Ali Al Salem, Kuwait, from where a detachment of twelve eventually participated in Operation Desert Fox. Soon afterwards, the Saudi commitment was taken over by Tornado F3s, and the GR1 detachment in Kuwait was reduced to eight aircraft at the beginning of 2000. All these changes reflected, or were influenced by, UK and US efforts to persuade Iraq to co-operate with UNSCOM. RAF frontline units in the Gulf found themselves acting as instruments of diplomacy to a degree perhaps unparalleled in recent history.

In what follows, three particular points must be born in mind. First, no attempt has been made here to record the RAF's contribution to Operation Southern Watch in its entirety – something that would require a separate history. Second, the objective here is not by any means to present a definitive account of the UNSCOM crisis; such a task cannot fall within the Air Historical Branch's remit. Nevertheless, it has been necessary to examine the crisis

in some detail to demonstrate how almost every twist and turn in the convoluted UNSCOM saga had direct and significant implications for the RAF. Finally, it is also not the aim of this narrative to measure in detail the effectiveness of British and American strategy in the period under review. Rather, the intention is to provide a clear, factual account of the events that can be drawn on both as a reference source and a guide for campaign analysis. Every effort has been made to explain the motivation behind particular decisions at the strategic and operational levels, as recorded in the official documents – the calculations involved, the expectations of effect, the objectives, the constraints – and to describe the results achieved. Yet many unanswered questions inevitably remain concerning Iraq's WMD-related activities before, during and after the events considered here.

The Background and the Emergence of the UNSCOM Crisis

The first RAF deployments to the Gulf under the auspices of Operation Southern Watch took place in August 1992, when a detachment of three Tornado GR1s and three GR1As was sent to Dhahran. Between 1992 and 1997, the operation was largely characterised by routine patrolling of the Southern NFZ in conjunction with the USAF and the French Air Force. The GR1s' primary contribution to the coalition was the provision of high-quality tactical reconnaissance imagery of southern Iraq, but they also conducted simulated attack missions, exercises and training. Over these five years, they flew more than 7,500 operational sorties.

After the initial deployment phase, there were three periods of particularly heightened tension. An increasing number of Iraqi air incursions and the deployment of new surface-to-air missile (SAM) systems into the NFZ late in December 1992 and in January 1993 led the US, the UK, France and Russia to issue a *démarche* to the Iraqis threatening military action. Iraq's response did not fully satisfy the coalition, and air strikes against her air defences were therefore mounted on 13 and 18 January. RAF Tornado GR1s participated in these actions under the UK operation name *Ingleton* (see Annex A), attacking command and control facilities at both Al Amarah and An Najaf. In October 1994, Iraq deployed a substantial force of ground troops and tanks south of the 32nd parallel (which marked the beginning of the Southern NFZ), near to the Kuwaiti border, and the coalition responded by dispatching additional air and ground forces to the Gulf. The UK, in an operation named *Driver*, deployed six additional Tornado GR1s to Dhahran together with sixteen extra crews.

Confronted by this show of force, the Iraqis climbed down and pulled back their troops. The additional RAF aircraft and aircrew were then withdrawn.

The third crisis occurred in August 1996 when, after a period of inter-Kurdish faction fighting in northern Iraq, Saddam Hussein allied himself with one of the two main groups – the Kurdistan Democratic Party (KDP). On the 29th, at the request of the KDP, he deployed 15,000 troops to capture the city of Irbil from the other major Kurdish faction, the Patriotic Union of Kurdistan. The US was determined that Saddam should not be allowed to reassert his control over Kurdish areas, and planning for a response began immediately. PJHQ was directed on 1 September – as an extension of Operation Jural – to prepare for UK forces to participate in coalition operations against Iraq. Under the auspices of Operation Lancaster, two self-contained packages of aircraft were placed on standby to reinforce the RAF detachments in Saudi Arabia and Turkey (for Operation Northern Watch – the patrolling of the Northern NFZ), while the GR1 detachment at Dhahran commenced planning for attacks against targets in the Southern NFZ. However, Saudi Arabia then refused to allow offensive operations to be flown from her soil, so military action was confined to strikes by US Navy Tomahawk land-attack missiles (TLAMs) and USAF air-launched cruise missiles (CALCMs) launched from non-Saudi-based aircraft. The Iraqis were informed that the Southern NFZ would be extended from 32°N to 33°N, and Saddam then withdrew his troops from Irbil. The other significant event in this period was the movement of the GR1 detachment from Dhahran to PSAB; the aircraft arrived there on 11 September. The move occurred primarily for reasons of base security.

A year later, the UK contribution to Operation Southern Watch comprised one VC10 based at Muharraq, Bahrain, and six Tornado GR1s based at PSAB. The GR1s were all capable of employing the TIALD system and could be used either in the tactical reconnaissance role or in the attack role using laser-guided bombs (LGBs). Sorties for Operation Southern Watch were mounted on most days, the RAF detachment typically flying on six days out of every seven and providing one wave of four aircraft for tactical reconnaissance supported by the VC10. The detachment was resourced to allow for a surge period of three days, flying two waves of three or four aircraft per day. They were periodically joined by a single Nimrod R1 from 51 Squadron, RAF Waddington, detached to Muharraq. Under the UK operation name Argentic, the Nimrod R1 contributed to Operation Southern Watch and also collected strategic intelligence.

Operations over southern Iraq remained overwhelmingly concerned with policing the NFZ until October 1997, when the UNSCOM crisis began to assume greater prominence. After the Gulf War, the provisions of United Nations Security Council Resolution (UNSCR) 687 (1991) theoretically prohibited Iraq from owning, manufacturing or importing WMD – specifically biological, chemical and nuclear weapons and ballistic missiles with a range greater than 150 kilometres. UNSCOM was created to supervise Iraq's compliance with the WMD clauses of UNSCR 687, while the International Atomic Energy Agency (IAEA) was assigned an equivalent function for nuclear weapons. These organisations were charged with undertaking on-site inspections of Iraqi nuclear, biological, chemical, and missile capabilities and were, if necessary, to destroy or remove the weapons concerned, or render them harmless. The UK participated in UNSCOM activities under the auspices of an operation entitled Rockingham. Restrictions on Iraqi exports were imposed, pending full, final, and complete disclosure (FFCD) by Iraq of its past WMD programmes.

Although Iraq formally accepted the provisions of UNSCR 687, her government regularly obstructed their implementation, co-operating only grudgingly at best and displaying outright hostility towards UNSCOM during periods of heightened tension. FFCD was not certified and sanctions therefore remained in place. When the UNSCOM crisis arose in October 1997 Saddam Hussein was assessed to retain some WMD stocks, and the Joint Intelligence Committee believed he could re-establish a chemical and biological capability within months. However, well before that – on the basis of inspections conducted and intelligence acquired since 1991 – UNSCOM became convinced that Iraq was operating an elaborate concealment mechanism designed to hide documents, computer records, and possibly items of equipment related to WMD prohibited under UNSCR 687. This was confirmed by Saddam Hussein's son-in-law, Hussein Kamel, following his defection from Iraq in 1995. The Commission lacked the means to thwart these measures without the assistance of western intelligence agencies, which came to play an important part in particular areas of its work from 1996 onwards.

Any residual international consensus on Iraqi disarmament evaporated after Kamel's revelations. Among the permanent members of the UN Security Council, France and Russia were hoping to gain economically from Iraq's recovery and were looking forward to the relaxation and ultimate removal of UN sanctions; but Kamel's testimony promised to extend the UNSCOM inspection process for years to come. UNSCOM itself was left with little option

but to target key nodes in the concealment mechanism, which it did very effectively with western intelligence support, but these inspections were provoking strong Iraqi opposition by 1997. The UN Secretary General believed that UNSCOM was becoming too confrontational; he wanted an inspection regime that functioned smoothly and a clear path towards FFCD and the relaxation of sanctions. America favoured the continuation of weapons inspections and sanctions, as did the UK, although there have been suggestions that, even at this early stage, Washington was becoming disillusioned with UNSCOM.

Tension had been mounting in the Gulf for some months before the UNSCOM crisis developed. In May 1997, Iraq surprised the US-led coalition by violating both NFZs under the guise of moving tired pilgrims at the end of the Hajj religious festival. From August 1997 onwards, the Cabinet Office, the Foreign Office and the MOD were examining options for dealing with further Iraqi violations of the NFZs. On 29 September, Iran attacked camps inside Iraq where the Iranian dissident organisation, the Mojahedin-e Khalq, was based, and the Iraqis immediately responded by launching aircraft to defend their sovereign airspace. In doing so, they violated both the Northern and Southern NFZs. Over the next five weeks, these violations continued. The coalition responded by imposing its presence more effectively, making early use of the American aircraft carrier Nimitz and increasing the intensity of air patrolling. The NFZ violations soon ceased.

The situation in the Gulf was discussed at a Cabinet Office meeting on 30 September. Two days later the Deputy Chief of Defence Staff (Commitments)(DCDS(C)), Air Marshal Sir John Day, issued a Planning Directive to the Chief of Joint Operations (CJO), Lieutenant General Sir Christopher Wallace, requiring PJHQ to draw up a series of options for sending reinforcements to the Gulf to enable the UK to participate in any coalition response, including offensive operations against Iraq if such action proved necessary to enforce the NFZs. The Planning Directive instructed PJHQ to submit options for the deployment of additional air forces 'including if feasible maritime air forces' and to 'make recommendations concerning the full range of air activities in which UK forces could participate'. However, DCDS(C) apparently believed that the combat aircraft already available in the Gulf would be more than capable of meeting any increased offensive or defensive requirements resulting from the heightened tension there. The UK might therefore most usefully contribute more reconnaissance, intelligence-gathering and support aircraft. Important considerations were expected to include basing arrangements and the time involved in deploying assets into

theatre. Targeting work was to commence in collaboration with US CENTCOM and Defence Intelligence (Commitments) focusing on air defence sites and operations centres, airfields and military communications facilities. The plan was to be constructed in accordance with the need to minimise British casualties and avoid undermining the legitimacy of Arab coalition allies. The UK contribution might also be shaped by the need to maintain concurrent operations in the Former Yugoslavia.

Completed on 6 October, PJHQ's response assumed that the UK's fundamental objective in the Gulf was to contain Saddam Hussain in order to prevent him from rebuilding Iraq's WMD capabilities and launching attacks on Kuwait or Saudi Arabia. The NFZs were seen as a central pillar in the strategy of containment, and the desired 'end state' was therefore identified as 'the maintenance of the enforcement of the NFZs in Iraq in support of overall UN and coalition policy [and the] reduction in the threat posed by Iraq to coalition air forces'. But the military choices available to the UK were influenced by a variety of other considerations. In purely operational terms, the most sensible option would have been to send support and/or reconnaissance aircraft, such as the Nimrod R1 or the E-3D, because there were already ample offensive and defensive assets in theatre.

However, if it were considered advantageous to send offensive aircraft to the Gulf to demonstrate the coalition's resolve and the UK's solidarity with other coalition members – principally the United States – the precise contribution would depend on basing arrangements. The preferred option was to dispatch more Tornado GR1s¹⁰ to Saudi Arabia. Sustained surge operations (beyond the three days already allowed for) could be achieved through the deployment of two more GR1s with crew, one extra Vicon reconnaissance pod, an additional TIALD pod, and a small amount of logistical support; a second VC10 tanker would also be required, probably based at Muharraq. A further six GR1s could then be deployed if the scale of operations increased further. But the experience of Operation Lancaster suggested that Saudi Arabia would not permit offensive operations to be launched from her soil unless she was threatened by Iraq. The GR1s would therefore have to be based elsewhere. Kuwait was thought to be too close to the Iraqi border for safety, so Bahrain was proposed as a potential alternative.

If it proved impossible to base aircraft in either Bahrain or Kuwait, an aircraft carrier such as HMS Invincible might be deployed to the Gulf instead, but PJHQ drew attention to the

operational limitations of the Royal Navy's Harrier FA2s and stressed their inability to self-designate LGBs. It was far from certain that the Saudi authorities would allow Saudi-based GR1s to designate for the FA2s, and it seemed possible that legal problems or difficulties with Rules of Engagement (ROE) might arise with foreign third-party designators. Moreover, the FA2s possessed very limited communications equipment, and this was likely to prevent them from being fully integrated into Operation Southern Watch in a non-benign situation. As an alternative, PJHQ suggested that a mixed force of carrier-born RAF Harrier GR7s and Navy FA2s might be deployed. The GR7 was a more capable offensive platform than the FA2 and had a greater radius of action. The concept of a joint Harrier force was in its infancy in October 1997 but had received formal endorsement from the Secretary of State for Defence. The operation of GR7s from carriers had been thoroughly developed earlier that year in Exercise Ocean Wave¹¹ in the Far East, and the Royal Navy's FA2s had participated in Operation Southern Watch during the same deployment.

Following PJHQ's response, initial targeting work commenced, and the Attorney General's Office began to address legal aspects of the MOD's options. Preliminary consideration of an enhanced Gulf deployment was therefore already in progress when, on 7 October, UNSCOM delivered a hard-hitting report¹² that described how their activities had been hampered by deliberate obstruction and concealment by the Iraqi authorities. On 23 October the UN Security Council debated the report, the US seeking a tough stance while Russia, China and France urged restraint. All three countries abstained from the resulting resolution, UNSCR 1134 – a very weak document in any case, imposing no new measures of note. Nevertheless, on 25 October, intelligence sources indicated that Iraq was about to cease co-operation with UNSCOM altogether. During the next three days, a variety of diplomatic efforts sought to deter the Iraqi government from this course of action, and Russia went so far as to issue a public warning to Iraq on the 28th. As a result, Iraq agreed to continue working with UNSCOM on the condition that no US personnel participated in their inspections. In response, the UN issued a presidential statement condemning Iraq's action and warning of 'serious consequences' (an umbrella term that could potentially cover a range of contingencies, including military action) if her intransigence continued.

That day, the Cabinet Office reviewed the situation and asked the MOD to undertake a further study of UK military options for action against Iraq. It was clearly envisaged that such action should not be limited to reconnaissance or support. Consequently, as there had been

no change in Saudi Arabia's position, the MOD instructed PJHQ to consider the following possibilities:

Option 1. A carrier with the FA2.

Option 2. A carrier with the GR7.

Option 3. A GR1 detachment based in Bahrain or Kuwait.

PJHQ's response assumed that the UK would wish to participate in offensive bombing operations alongside coalition partners in what was described as a 'punitive' or 'coercive' campaign. Missions would be conducted with precision-guided munitions (PGMs) and a surge flying rate of one sortie per aircraft per day was envisaged. To achieve this end, the most effective capability would be provided by a detachment of eight Tornado GR1s preferably based at Bahrain. On the assumption that base facilities were available there, a GR1 detachment could establish a limited operational capability in theatre four days after the order to deploy. By contrast, a carrier deployment to the Gulf was likely to be depressingly slow, requiring no less than 23 days to become operational.

If, however, a lack of base facilities compelled the UK to accept the carrier option, it was considered that a mixed force of FA2s and GR7s would be preferable to a force comprising FA2s alone. While the GR7 was no less dependent on co-operative laser designation than the FA2, clearance for the GR7 to conduct self-designating TIALD operations was expected in 1998. Otherwise the only advantage to be gained from deploying a carrier to the Gulf was financial. Including 30 days of operational flying, the estimated cost of the GR1 deployment amounted to more than £11m whereas the preferred carrier option was unlikely to cost much more than £3m. In time, these estimates were raised to £13m and £5m respectively.

While the deliberations in Whitehall continued, tension mounted in the Gulf. Iraq began dispersing military equipment – apparently as a precautionary measure in anticipation of air strikes – and some extra SAM deployments were noted in the NFZs. On 30 October, three American members of UNSCOM were prevented from entering Iraq, and several similar incidents occurred during the following week. On 2 November, Iraq refused to accept further UNSCOM U-2 reconnaissance flights in her airspace (although, in the event, these flights

continued without interference) and UNSCOM reported on the 5th that the Iraqis had moved a substantial amount of dual-capable equipment, which they had been monitoring, and that their monitoring cameras had apparently been tampered with. Deployments of SA6 systems into the NFZs were observed for the first time on the 6th.

Against this background, further Cabinet Office meetings resulted in the preparation of a joint Foreign Office and MOD memorandum for the Defence and Overseas Policy Committee (DOP), which brought together the planning, targeting, legal and diplomatic studies undertaken since the end of September. The memorandum reflected the growing awareness that recent Iraqi actions represented a major challenge to the terms of the 1991 cease-fire. The fundamental aim of British strategy in the crisis was said to be to ensure Iraq's compliance with previous UNSCRs. It was accepted that the use of 'considerable' force might be necessary to achieve this end, as Saddam Hussein was probably calculating that the gains from his actions had the potential to outweigh the losses; he could absorb a limited attack on the 1996 model without undue pain. In 1996 Iraqi air defence sites had been targeted; it was now proposed that the suspected WMD sites at the centre of the UNSCOM dispute might themselves be attacked.

There could be advantage in attacking targets related to WMD activity, particularly since this would make it more difficult for Iraq to conduct or reactivate WMD programmes in the future.

The MOD believed that it would be possible to identify a WMD-related target set, including a number of high-value targets of importance to the regime. Their destruction would, it was suggested, cause sufficient damage to Iraq to achieve the objective of persuading Saddam to desist from his obstruction of UNSCOM. Air defences and airfields might also have to be attacked to clear the way for strikes on WMD-related facilities. It was expected that the United States would lead any military action and that the UK would participate; French involvement was considered unlikely.

Apart from the basing issue, which remained unresolved as yet, one other problem identified at this stage was the legality of any operation against Iraq. The United States government believed that there was sufficient authority in existing UNSCRs (specifically UNSCR 687) for offensive action. However, the British Law Officers took the view that a specific UN

mandate would be necessary to allow such action to be taken. It was not expected that a UNSCR providing this mandate would be attainable, but there would be a respectable legal basis for members of the coalition to use force to ensure compliance if Iraq were declared to have committed a 'material breach' of the 1991 ceasefire (including the terms of UNSCR 687). The memorandum therefore recommended a dual strategy. The UK should seek the resumption of normal UNSCOM activities with the full support of the UN Security Council but work towards the adoption of a UNSCR condemning Iraqi action and declaring it to be in breach of UNSCR 687 in the event of Baghdad's continued refusal to co-operate. All available opportunities were to be taken to generate an international consensus behind such a resolution. Following the adoption of a UNSCR, the UK should support UN-authorized military action and be prepared to contribute to coalition operations. Targeting work should meanwhile continue alongside preliminary preparations for the deployment of Tornado GR1s to the Gulf as part of an international operation, should one become necessary.

The next Cabinet Office meeting was held on 10 November. It was now confirmed that Saudi Arabia would not permit the RAF detachment based at PSAB for Operation Southern Watch to engage in offensive operations against Iraq unless the Saudis were directly threatened. Although the MOD still favoured the GR1 option, there now appeared to be a real possibility that hostilities might break out in the Gulf before alternative basing arrangements had been finalised, and that the UK might consequently be unable to contribute offensive aircraft to any operation conducted in response to the UNSCOM crisis. To guard against this eventuality, HMS *Invincible* and her supporting Royal Fleet Auxiliary, the *Fort Victoria*, were diverted from the Caribbean to the Mediterranean. With *Invincible* repositioned, it would be possible to mount a carrier deployment with Harrier FA2s and/or GR7s if it proved impossible to base GR1s in Bahrain or Kuwait.

In the meantime, work had continued to secure the all-important UNSCR giving legal basis to military action. Yet the resolution that emerged unfortunately fell some way short of British requirements. On 12 November, the UN Security Council unanimously passed UNSCR 1137, which condemned Iraq's actions, imposed a travel ban on members of the Iraqi government and suspended sanctions reviews until Iraq resumed co-operation with UNSCOM. The resolution also declared an intention to take such 'further measures as may be required' to achieve this end. Nevertheless, it did not declare Iraq to have been in 'material breach' of UNSCR 687, nor did it threaten 'serious consequences' in the event of

Iraq's failure to comply. Iraq reacted with scorn and defiance and expelled the six US members of UNSCOM from Iraq. UNSCOM then announced that it would not allow its team to be segregated in this way; their remaining staff would therefore leave Iraq the next day. The UN subsequently issued a further presidential statement condemning Iraq's action but refraining, once again, from any language that might have suggested UN authority for military intervention.

The Initiation of Operation Bolton

UNSCOM's departure from Iraq signalled the beginning of a new phase in the crisis. The MOD now established a dedicated Current Commitments Team,¹³ and further steps were taken to prepare for a joint FA2/GR7 deployment on board HMS Invincible. The basic concept involved the dispatch of eight GR7s to Gibraltar, where they would rendezvous with Invincible and where co-located airfield and port facilities would enable aircraft to embark easily on the carrier. It was expected that there would then be abundant opportunities for the GR7s to work up during their transit through the Mediterranean, where they might also practise co-operative laser designation in conjunction with aircraft from the US Sixth Fleet. The Secretary of State for Defence approved the diversion of HMS Invincible to the Mediterranean on 13 November; on the 14th, he agreed to a reduction in 1 Squadron's Notice to Move (NTM) and to the dispatch of equipment and ammunition to Gibraltar. In the meantime, a proposal to hasten GR7 TIALD integration reached DCDS(C) from the Directorate of Air Operations (DAO) and was quickly approved.

The next day, Operation Bolton was formally activated, and CJO was appointed Joint Commander. Operation Bolton was at first concerned with 'preparations against the contingency' of military action against Iraq. This, it was suggested, might be 'an appropriate response to hostile action by Iraq' against the UN or coalition monitoring operations in the NFZs, or to Iraq's continuing breaches of UNSCRs. Military preparations were to be part of a dual strategy concerned first and foremost with the application of diplomatic pressure on Iraq and the UK's support for US political and diplomatic initiatives. If diplomatic means then failed to resolve the crisis, the UK might 'consider military means to coerce Iraq into compliance with UNSCRs'.

The British government's objectives in Operation Bolton were very clearly defined.

A. Political Objectives: The political objectives are to: resume effective UNSCOM operations, ensure the safety of remaining UNSCOM personnel, and keep unanimity within the UNSC and the Arab world sympathetic towards UN aims. HMG is prepared to contemplate the use of force in support of its political objectives.

B. Military Objectives: The military objectives are to support the political objectives by deploying and sustaining sufficient military forces, in concert with the US and other potential coalition partners, to coerce Iraq into compliance, or to respond with military action in the event of Iraqi attacks against coalition forces ...

C. Strategic End State: To restore the authority of the UN in Iraq with the resumption of UN weapons inspections with no preconditions.

Full command of all British forces assigned to the operation was to be retained by the relevant Service Commanders-in-Chief, while operational command would be exercised by the Joint Commander. He, in turn, could delegate operational control to a Joint Forces Commander once a Joint Forces Headquarters had been established in theatre.

The first and most obvious point to stress about Operation Bolton is that it was only one part of a broad political effort to resolve the UNSCOM crisis. The British government hoped that Iraq would bow to diplomatic pressure and readmit the American weapons inspectors, but her compliance seemed unlikely unless western diplomacy was backed by a credible threat of force. The operation was initiated to make precisely this threat. But what would happen if Saddam Hussein did not succumb to political pressure? In this instance the forces assembled in the Gulf might be employed in offensive operations against Iraq. At first, this would mean using air power to coerce Saddam into submission, but the possibility of targeting some of the WMD-related sites at the centre of the dispute also remained central to British strategy.

Two other important operational steps were taken on 14 November. First, anticipating a possible surge of activity among the aircraft already in the Gulf for Operation Jural, PJHQ decided to deploy an additional four GR1 crews to PSAB and send a second VC10 tanker

to Muharraq (a second tanker was already provided for under the Chief of the Defence Staff's (CDS's) Operation Jural directive). Second, the Secretary of State for Defence agreed verbally that an approach be made to the Kuwaiti government to seek a suitable airfield for a detachment of Tornado GR1s from the Joint Rapid Deployment Force (JRDF).¹⁴ It so happened that CJO was due to visit the Gulf on the 16th, when a meeting was already planned with Sheikh Sa'ad, the Crown Prince of Kuwait, and this provided a perfect opportunity to raise the question of the GR1 deployment. The Kuwaitis are said to have agreed to it with enthusiasm, believing that the UK 'was preparing for the final strike against Saddam'. PJHQ then decided to send a reconnaissance party to Kuwait to examine the facilities on offer.

By this time, predictably enough, the US was engaged in a significantly larger build-up of forces under the auspices of an operation entitled 'Desert Thunder'. A second Carrier Air Group (CAG) headed by the USS George Washington was en route to the Gulf to join the Nimitz CAG, and the dispatch to Bahrain of an Air Expeditionary Force comprising some 30 F-15s and F-16s and two B-2s had been confirmed, together with a deployment of six F-117s to Kuwait. The Americans had also sought and received permission to deploy B-52s to Diego Garcia on the understanding that the UK would be consulted in the event of their use.

In response to the military build-up, the Iraqi government embarked on a strategy that they succeeded in maintaining for more than a year; this has sometimes been described as 'obstructive co-operation'. To the UN and particularly those permanent members of the Security Council most sympathetic towards her position (Russia, China and France), they offered full co-operation with UNSCOM. UNSCOM would then resume its activities only to face renewed obstruction from the authorities so that strict weapons monitoring remained all but impossible. These tactics proved extremely effective not only in exposing the UN's limitations as an instrument of crisis resolution but also in encouraging disagreements between the major powers. Hesitant and divided, the international community proved unable to formulate a coherent response to the Iraqi challenge.

On 20 November, the five permanent members of the UN Security Council (P5) met at Geneva, where they learnt from Russia's foreign minister that Iraq was prepared to accept the return of UNSCOM in its previous composition to undertake the work stipulated in

UNSCR 1137. The resumption of UNSCOM activities was to be subject only to agreement on certain procedural matters; it was otherwise unconditional. In response, the British government decided not to accept the Kuwaitis' offer to host a Tornado GR1 detachment but to advise them instead that the aircraft might be deployed if Iraq failed to co-operate with UNSCOM. The base reconnaissance team was dispatched to Kuwait as planned, and it was agreed that HMS Invincible should set sail from Gibraltar with the GR7s both to allow training to take place and keep UK options open in the event of further problems with Iraq. Invincible left Gibraltar on 21 November – the same day that the UNSCOM inspectors returned to Iraq – with seven GR7s and twelve 1 Squadron pilots onboard. Work started immediately on FA2/GR7 integration on both day and night operations. The number of aircrew at PSAB was reduced from its augmented level but the second VC10 was retained at Bahrain for the time being. The US government similarly opted to retain all deployed forces in the Gulf pending a clear demonstration from Iraq that her position had indeed changed.

The UNSCOM weapons inspections resumed on 22 November, but Iraq's willingness to fulfil her obligations under UN resolutions was soon being called into question. A specific category of so-called 'sensitive' sites caused particular concern; these included sites associated with the management of the concealment mechanism – Iraqi security service and Republican Guard facilities and presidential palaces. UNSCOM had in fact *never* had access to the interior of a palace and had achieved access to palace grounds on only two occasions since 1991. After repeated difficulties in this area, UNSCOM's chief weapons inspector, Richard Butler, visited Baghdad with Russian, French and British commissioners in mid-December, but he could win only modest concessions from the Iraqis. They refused to concede unrestricted rights of access to UNSCOM and proved particularly obstructive where the presidential sites were concerned.

Butler left Baghdad on 16 December and reported to the UN Security Council on the 18th that he had made some progress on procedural arrangements covering sensitive sites but none on access to presidential sites, which the Iraqis were treating as a separate category. Plans to visit several sensitive locations between 18 and 23 December were then postponed to prevent any escalation of the crisis over the Christmas period. Instead, the UN issued yet another presidential statement supporting Butler and demanding unrestricted access for UNSCOM. The weapons inspectors returned to Iraq on 7 January with the intention of conducting the postponed visits between the 11th and the 18th. They duly began the

inspections but, on 13 January, the Iraqis halted the activities of UNSCOM team 227 (under Scott Ritter), complaining of its largely American and British composition and alleging that Ritter was working for the CIA. Ritter's team was in fact responsible for investigating the Iraqi concealment regime.

The UK's response to these rising tensions continued to focus on the Harrier GR7s deployed on board HMS Invincible. In late November, they were still located in the western Mediterranean, where training sorties were largely flown without incident. On the night of 24/25 November a GR7 ditched in the sea adjacent to Invincible, but the pilot was rescued, having suffered only minor injuries, and his aircraft was also safely recovered. After their return to the UK, 1 Squadron reported that Invincible was poorly equipped for night landings:

The lack of a Ship's TACAN¹⁵ should warrant urgent attention at the earliest opportunity; on more than one occasion, the ship's radar failed during a multiple night recovery. The lack of a filtered landing light caused visual problems for the night Landing Safety Officer. Additionally, none of the 'deck personnel' are scaled for NVGs¹⁶ for EO¹⁷ deck operations.

It was planned that the carrier should proceed to the Adriatic in early December so the Harriers could participate in Operation Deliberate Guard over Bosnia. They would afterwards return to Portsmouth. Meanwhile, the accelerated programme to integrate TIALD into the GR7 made steady progress.

The MOD saw no reason for the GR7s to remain at sea for longer than was necessary, and, by December, the case for their withdrawal was strengthening. The base reconnaissance of Kuwait, having completed its mission, had reported that Ali Al Salem airbase could readily accommodate a detachment of GR1s. It was therefore considered that an offensive capability against Iraq could best be established simply by maintaining a GR1 squadron in the UK or Germany at reduced NTM. At the same time, HQ 1 Group was becoming concerned that pilot skill fade was reducing 1 Squadron's combat readiness. The training sorties flown at sea were limited to air combat training and splash firing, and there was little or no opportunity to fly the overland simulated attack profiles appropriate to operations in the Gulf. Moreover, on average, the embarked flying rate was only one sortie per pilot per two days.

By the second week of the month, when *Invincible* was in the Adriatic, the Secretary of State had accepted that she should return to Portsmouth as planned, and he wrote to the Prime Minister to this effect on the 11th, suggesting that the GR1s be sent to Kuwait instead. They were 'always our preferred military option', he wrote, 'as they are more capable than the RAF Harriers embarked on the *Invincible* and could reach the Gulf more quickly'.

However, the MOD's view was not shared by the Foreign Office. On 12 December the Foreign Secretary warned Downing Street that *Invincible*'s withdrawal would upset the United States and indicate to other nations that the UK believed the UNSCOM crisis to be over. It was not, and future negotiations were likely to be very difficult. The Foreign Office also argued that the United States was adopting an excessively bellicose posture by advocating an immediate resort to force in the event of further problems with Iraq. In these circumstances, the GR1s' deployment would be seen as 'a significant ratcheting up of our military preparedness and point in the direction of immediate military action, which we want to avoid'. The Prime Minister accepted these arguments. On the basis that *Invincible*'s withdrawal would send the wrong signals to Iraq, he ruled that she should stay in the Mediterranean over Christmas.

The sole deployment to the Gulf undertaken in this period was therefore a Nimrod R1 Argentic operation conducted between 2 and 12 December. Inevitably, perhaps, the documents are very uninformative about the nature or quality of the intelligence obtained in this period and dwell mainly on the volume of radio and radar emissions. This was generally described as 'light' or 'routine'.

In the first week of January, the government was forced to consider what action should be taken if UNSCOM encountered further obstruction when their inspections resumed on the 7th. The Prime Minister decided to strengthen the tone of public statements on the crisis and prepare to take a harder line with Iraq. Surveying the available options, the MOD reiterated that the deployment of eight GR1s from the JRDF to Kuwait remained 'militarily the prime option' and militarily sufficient for the targets expected to be allocated. Yet *Invincible* was still in the Mediterranean and could reach the Gulf in about seven days. In purely operational terms, there were strong arguments for deploying both the carrier and the GR1s to the Gulf as soon as possible. This would allow time for work-up training and ensure

that British forces were properly placed to participate in any short-notice offensive action. The Secretary of State afterwards wrote to the Prime Minister, supporting his tougher stance and outlining the various military possibilities, which included moving *Invincible* to the Gulf forthwith.

CDS had already concluded that military action in the Gulf was highly probable and that *Invincible* should therefore be sent through the Suez Canal immediately. He duly advised the Secretary of State that the carrier should arrive in theatre at least four days before the start of hostilities to allow time to train and develop operating procedures with the Americans. 'My firm military recommendation is that deployment of the ship should occur as soon as possible,' he wrote on 12 January. These arguments were promptly reinforced by events on the 13th, when the Iraqis halted the work of UNSCOM 227.

If either the GR7s or the GR1s (or both) were to be sent to the Gulf, the MOD had to address the dispatch of the GR7s first to allow time for *Invincible*'s transit through the Suez Canal. Notwithstanding, the Foreign Office attempted to prevent her deployment, arguing that it would be seen as a knee-jerk response to the UNSCOM 227 problem and might cause an adverse reaction in the UN Security Council. It was then decided to consult the Americans. Both the US Secretary of State and the National Security Advisor were found to be in favour of the carrier's prompt dispatch, and the Foreign Office therefore withdrew its objections. The Secretary of State for Defence now possessed overwhelming arguments in support of immediate deployment. They were:

1. *Invincible* had been the focus of the UK's response to the UNSCOM crisis and had been in the Mediterranean for over two months. There was a media and public expectation that the next UK military move would involve the carrier.
2. The Americans were intimating that hostilities might well break out in late January, at the end of the Eid Al Fitr holiday after Ramadan. Ample time had to be allowed for *Invincible*'s transit to the Gulf, and for the Harrier crews to work up with the Americans.
3. The Prime Minister was known to advocate a policy of applying pressure on Iraq incrementally. If *Invincible* was dispatched immediately to the Gulf, the

GR1s could be held in reserve in the short term, so providing a further deployment option for the future if one were needed. They could, of course, reach the Gulf in a fraction of the time required by the carrier.

The only outstanding question concerned the accelerated programme for integrating the Harrier GR7 with TIALD, which was approaching its most critical stage. The aim was to achieve – by 31 January – an operationally acceptable standard of system integration plus airworthiness clearances, a minimum of three 400-series TIALD pods modified to Harrier standard, two suitably modified GR7s and two pilots combat ready on TIALD and carrier flying. The situation on 14 January was that the TIALD operational flight plan had been delivered by the contractor, BAE, and was undergoing flight trials. Airworthiness advice and recommendations were anticipated from the Defence Evaluation and Research Agency by 23 January, permitting operational evaluation by the Strike/Attack Operational Evaluation Unit (SAOEU)¹⁸ from 26 January in time for frontline clearance on the 30th. One of the three TIALD pods had already reached SAOEU, the second was expected from BAE on the 19th, and Headquarters, RAF Strike Command (HQ STC) had located a third; the modification of all three to Harrier standard was anticipated by 23 January. One TIALD-modified carrier-capable aircraft was ready and the second was due by the 30th, while two 1 Squadron carrier-qualified pilots were to start their TIALD work-up on the 19th to reach combat-ready status by the 30th. Logistical support and test equipment, schedules and GEC field service representatives were also expected to be ready for deployment before the end of the month.

That day, the Secretary of State wrote to the Prime Minister, recommending *Invincible's* immediate dispatch to the Gulf and proposing that she remain there until the arrival of HMS *Illustrious* and a new GR7 detachment in March. On the 15th, Downing Street formally sanctioned her deployment. In the meantime, Air Commodore P.V. Harris, the Senior Air Staff Officer at 1 Group, was appointed Commander British Forces Bolton (CBFB). He flew out to Saudi Arabia on 19 January. His headquarters (HQBFB) was co-located with the HQ Joint Task Force Southern Watch (JTFSW) at the village of Eskan, south-east of Riyadh.

At 1400 on 16 January 1998, the Captain of HMS *Invincible* addressed the ship's company and announced that a decision had been taken to send her to the Gulf. RAF personnel are said to have taken the news well. As the 1 Squadron diarist put it, 'At last it appears we may finally get to do the job for which we were embarked.' Aircrew morale improved markedly

with the news. The squadron spent the next day giving and receiving briefings of operational relevance on such matters as the Iraqi and coalition air orders of battle, vertical/short take-off and landing essential knowledge, and combat survival and rescue (CSAR).

Invincible finally entered the Suez Canal at 0300 on the morning of 18 January, nearly two months after leaving Gibraltar. The 1 Squadron diarist described how the sun rose that day to reveal desert on either side of the ship and Egyptian T-64 tanks lining the Canal – a clear illustration of how easily it could be closed. After exiting at approximately 1800, the carrier pressed on with the aim of clearing the Gulf of Suez and its territorial waters as quickly as possible; this allowed training flying to resume on the 19th. The next day, in addition to the flying programme, aircrew commenced briefings about day-to-day SAM activity in Iraq and on the general dispositions of the Iraqi army. On the 21st, Invincible left the Red Sea and entered the Gulf of Aden. Flying training now began to include medium-level formations appropriate to TIALD operations.

The February Crisis and the Annan-Aziz Memorandum of Understanding

Relations with Iraq continued to deteriorate. On 14 January, the UN Security Council issued a further presidential statement in which he deplored her behaviour and demanded full co-operation with UNSCOM. Two days later, UNSCOM 227 was withdrawn from Iraq. On the 19th, Butler began talks with the Iraqi Deputy Prime Minister, Tariq Aziz, which ended inconclusively the next day with Aziz proposing a three-month moratorium on UNSCOM access to presidential sites, pending the results of three Technical Evaluation Meetings (TEMs) on missile warheads, chemical (VX), and biological weapon files.¹⁹ Butler briefed the UN Security Council on 23 January, and the Council then issued a statement declaring that Iraq's moratorium on access to sites was unacceptable. There were to be consultations within the UN optimistically aimed at producing a unanimous response to ensure full Iraqi compliance with SCRs. There followed an intensive period of diplomatic activity encompassing the UN, Washington, London, Paris, Baghdad and other parts of the Middle East.



HMS Invincible and the Harrier GR7s of 1 Squadron during Operation Bolton.



The UK's operational posture now moved from a phase of initiation to one of consolidation. On the very day that Invincible cleared the Suez Canal, the carrier destined to replace her, HMS Illustrious, sailed from Portsmouth for Gibraltar. She left Gibraltar on 27 January with seven Harrier GR7s of 3 Squadron, which was to relieve 1 Squadron in the Gulf. Operation Bolton now became the overarching operation encompassing all British military assets and activities in the Gulf region, including Operation Jural (but not Operation Warden) and Operation Armilla, the Royal Navy's patrol in the Gulf. CJO assumed Operational Command of these assets, Operational Control of Jural force elements being exercised by the CBFB. Operational Control of Armilla assets was assigned to the Commander of the carrier task group, who became Maritime Component Commander for Operation Bolton, but he was instructed to delegate Tactical Command of both the GR7s and the FA2s on Invincible to the CBFB when the Task Group reached the Armilla area. This occurred on 24 January, when Invincible entered the Straits of Hormuz. In February, the AOC 1 Group, Air Vice-Marshall GE Stirrup (later Marshal of the Royal Air Force Lord Stirrup), was appointed Senior British Military Adviser to CINCCENTCOM and designated as National Contingent Commander or UK Air Component Commander if circumstances required the formation of UK Contingent or Air Component headquarters in the Gulf.

Meanwhile, having arrived in the Gulf, the GR7s at first continued with their programme of medium-level splash bombing and TIALD manoeuvres, while aircrew were kept up to date with briefings from both British and American staff from Eskan; they were also visited by the CBFB. Then, on 27 January, they began training integration flying, including co-operative laser designation with US naval aircraft and air-to-air refuelling (AAR) from a US KC-10 tanker – an experience new to most pilots. Overland flying and use of the Udairi Range in Kuwait for close air support (CAS)-type training made for some of the most productive sorties mounted by 1 Squadron for some time.

On the 29th they flew their first sorties for Operation Southern Watch in a strike familiarisation mission that involved co-operative laser designation with USN F-18s. The objective was to conduct a simulated attack against a bridge near Al Alamarah, some 100 NM inside Iraq, as part of a package of some 30 aircraft, including tankers, American E-2s and F-14s, and the FA2s from HMS Invincible. Although one of the four GR7s became unserviceable and was unable to participate, the other three proceeded to an AAR area and refuelled at dusk from an RAF VC10 before entering Iraqi airspace. The mission itself was

uneventful and seemed to demonstrate that the established operating procedures for co-operative laser designation were robust, although laser energy was only detected by one of the GR7s. On leaving Iraq they again refuelled before recovering safely to Invincible, having been airborne for approximately three hours.

The Southern Watch mission of 30 January was far less satisfactory. Two of the four GR7s failed to rendezvous with their F-18 laser designators, all four were unable to acquire laser energy, and the F-18s were involved in an air-miss with an FA2 that should have been at least 20 NM away from the area in which the incident occurred. But the mission did at least provide some valuable lessons about package marshalling and communications. RAF GR1s from PSAB participated with USAF aircraft in the GR7s' subsequent Southern Watch mission on the night of 2 February, the GR1s functioning as laser designators. The operating procedures were more successful but, once again, the GR7s were unable to detect laser energy. The documents contain no obvious explanation for these early laser energy detection problems.

The next UK deployments to the Gulf involved the dispatch of a third VC10 (to support the Harriers' flying programme and the enlarged sortie rate expected in the event of hostilities), a single Nimrod R1 and the first TIALD-capable Harriers. The Nimrod R1 had been scheduled to deploy to Bahrain under the auspices of another operation Argentic, but PJHQ now planned to incorporate the aircraft into Operation Bolton on her arrival in theatre. Unfortunately, diplomatic clearance problems with Bahrain held up these arrangements. The Nimrod R1 and the Harriers were eventually authorised to deploy on 2 February, but the VC10 did not arrive in Muharraq until the 6th. While these issues were being resolved, the apparent imminence of war again raised the question of whether Tornado GR1s should be deployed to Kuwait.

The Tornado option assumed the deployment of eight aircraft in an attack role, carrying LGBs and TIALD. This would raise the total UK offensive contribution in theatre from 19 aircraft (six Tornados at Al Kharj, seven Harrier GR7s and eight Harrier FA2s on Invincible) to a total of 27. Compared with the GR7, the Tornado could offer a robust and proven capability to designate and deliver LGBs. Each Tornado could carry three PGMs while the GR7 could only carry two, and the Tornado was not significantly constrained by the high ambient temperatures in the Gulf, whereas the GR7's engine performance was expected to

deteriorate from April onwards (see below). Furthermore, based in Kuwait, the Tornados could reach their targets without AAR, whereas GR7 missions from Invincible were predominantly tanker-dependent. In addition, in an extended air campaign, the GR1 was able to carry the new Paveway III LGB, which could thus be employed to supplement the RAF's limited stocks of Paveway II. Although Ali Al Salem might have been considered vulnerable as it was only 40 NM from the border with Iraq, detailed threat assessments concluded that Saddam's forces were likely to remain on the defensive.

On 30 January, the Secretary of State wrote to the Prime Minister seeking agreement in principle to the deployment of the eight Tornado GR1s to Kuwait over the weekend of 7/8 February. No decision was taken before the Prime Minister travelled to Washington to discuss the Iraqi crisis with President Clinton on the 3rd, but he approved the deployment on his return; the Secretary of State's authorisation was duly issued on the 6th. Meanwhile Kuwait's agreement was sought and received, and three pre-deployment teams were sent out to Ali Al Salem.

No. 14 Squadron, which had been on standby at RAF Bruggen since November, was now formally tasked to deploy to the Gulf: eight GR1s took off from Bruggen on the 9th. Technical problems forced one aircraft to divert to Crete en route, but the other seven reached Kuwait without incident. They were soon joined by the diverted aircraft and a replacement GR1 from Germany. Ali Al Salem proved adequate for the purposes of a short-notice emergency deployment, but it soon became clear that base facilities would require considerable improvement if the GR1s were to remain there in the medium-to-long term. A Kuwaiti Air Force training and helicopter base, it had been badly damaged during the Gulf War. The runway had since been fully repaired, but some of the aircraft pans, taxiways and supporting infrastructure had received only rudimentary attention; there was a good deal of gravel and other debris and thus an ever-present threat of foreign-object damage. Moreover, the base did not offer aircraft sun shelters and was exposed to sand storms, with inevitable adverse consequences for the aircraft engines in the event of sand ingestion.

The squadron was allocated an air-conditioned hangar, where makeshift operations and engineering line areas were quickly established in tented accommodation, along with the communications and information systems (CIS) essential to effective mission planning. These included mission support systems, intelligence systems such as the Joint Deployable

Intelligence Support System, the Pilot Joint Operations Command System, the RAF's Transportable Telecommunications System, the American TAC secure telephone, ASMA (the Air Staff Management Aid) and a direct MENTOR line. Subsequently, 14 Squadron developed a first-line engineering infrastructure capable of supporting and sustaining the operational task, and this was complemented by second-line provisions that evolved rapidly under the Tactical Logistics Wing.

Within hours of arrival, the Officer Commanding (OC) 14 Squadron, Wing Commander Rycroft, was flown to the HQ Joint Task Force Southern Watch and briefed in detail on the strike plans that would be implemented in the event of a decision to initiate military action. The squadron aircrew spent their first 48 hours in theatre developing combat survival and rescue procedures, studying Iraqi SAM dispositions, and gaining familiarity with Special Instructions (known as SPINS) and the daily ATO format. Operational status was declared on 12 February, a remarkable achievement in what was virtually a bare-base environment, a tribute to the engineering and logistics personnel involved, and the clearest possible demonstration of how at least some of the Gulf War's lessons on mobility and deployed operations had been learnt. The GR1s began by flying one daylight mission per day, but day and night sorties were being mounted by 19 February. Typically, four aircraft were involved – two TIALD-equipped designators and two bombers carrying simulated LGBs. All aircraft were fitted with Sidewinder AIM 9L air-to-air missiles, Skyshadow 2 electronic counter-measures (ECM) pods, and chaff and flare dispensers. The GR1s flew as part of coalition packages of up to 40 aircraft, comprising defensive counter-air (DCA), SEAD, ECM, airborne command and control, and CSAR aircraft. Like the GR7s, they carried out simulated attacks against targets in Iraq.



No. 14 Squadron Tornado GR1s at RAF Bruggen before take-off on 9 February 1998.



Bound for Kuwait, a 14 Squadron Tornado takes off from RAF Bruggen on 9 February 1998.



The first 14 Squadron Tornado GR1 to land at Ali Al Salem.



A Tornado GR1 at Ali Al Salem outside a hardened aircraft shelter destroyed in 1991 during the first Gulf War.



An RAF Regiment foot patrol along the Ali Al Salem perimeter.



A Royal Air Force Hercules turning to land at Ali Al Salem.

RAF C-130 Hercules transports played a key role in the GR1 detachment's deployment and flew out a variety of support units to Kuwait. They included contingents from the Tactical Communications Wing, the Tactical Supply Wing, the Mobile Catering Support Unit, the Royal Engineers, and the RAF Regiment, as well as Tactical Survive to Operate, survey, medical, meteorological and Air Traffic Control teams. Intelligence suggesting a possible terrorist threat to Ali Al Salem subsequently led the Secretary of State to approve the dispatch of 95 additional RAF personnel to the air base, 85 from the RAF Regiment and ten RAF policemen. By the final week of February, some 536 personnel were located at the Kuwaiti base. For the Hercules squadrons, this marked the busiest period of Operation Bolton. Their preparations for the GR1 deployment were largely based on rumour and speculation before a formal execution order arrived from PJHQ at the eleventh hour. RAF Akrotiri, their principal staging post, is said not to have been aware of any plan for the deployment until a VC10 route-activation aircraft arrived with a detachment of engineers and slip crews from RAF Lyneham. The detachment then worked 36 hours without sleep to organise and operate a slip pattern for aircraft flying from Lyneham to Bruggen or Marham and then on to Akrotiri, from where they proceeded to Kuwait. Between 6 and 13 February alone, 16 aircraft flew 49 complete sorties – approximately one every two hours – for 1,350 flying hours.

In the meantime, 1 Squadron was testing the first TIALD GR7, which had embarked on HMS Invincible on the morning of 3 February, assessing the detection ranges of the reflected laser energy by designating uninhabited oil platforms for a second GR7, which acted as a bomber. They collected a considerable amount of information and formed a favourable initial impression of the TIALD pod; the bomber had no difficulty receiving laser energy. No less encouraging was the next Southern Watch mission, on 5 February, when all four GR7s succeeded in acquiring laser energy from their Tornado GR1 designators. The 1 Squadron diarist wrote: 'This is the first time that a successful weapons drop could have been initiated by a complete formation since we commenced OSW.'²⁰

The second TIALD Harrier deployed to the Gulf on 8 February and embarked on Invincible on the 9th, bringing the total number of GR7s in theatre to eight; the number of pilots was increased to fourteen. Unfortunately, the TIALD Harriers' work-up was then interrupted when Invincible was forced to put into port for radar repairs, which took several days. The first Southern Watch mission involving laser designation by 1 Squadron GR7s was afterwards

scheduled for 14 February as part of a USN package from the newly arrived American carrier, USS Independence. However, an inability to contact Independence by any means during the planning cycle, which spanned some seven hours, denied a valid plan to the GR7 formation at the time of briefing; the only one available contained significant errors and was deemed unsafe. Ultimately, these flight safety concerns caused the mission to be cancelled. This decision was forced on 1 Squadron by Invincible's inadequate and unreliable communications, which afterwards occasioned strong criticism in the squadron's post-operation report; although undoubtedly correct, it was only taken reluctantly. Nevertheless, according to the squadron diarist, the cancellation 'upset a number of people in senior positions'.

The diarist continued:

Probably as a result of the recent port-call and the cancellation of tonight's mission, morale is once again low. The general feeling amongst the RAF personnel is a wish to return home. It is quite ironic that as a result of being out here since November, the enthusiasm of the pilots and engineers towards the task is waning. On the other hand, the Tornados, in a true show of flexible air power, have deployed to Kuwait and reached a position from where they can conduct offensive operations in under a week. The recurring question amongst the RAF is, now that host nation support has provided a land base for operations, why are we not disembarking? The answer is obviously political and ignores the fact that we would be a far more capable force were we land-based.

Aircraft unserviceabilities and poor weather frustrated the GR7s' Southern Watch flying on 15 February, but they at last flew a successful daytime TIALD mission into Iraq on the 16th, with two aircraft acting as designators and two as bombers. Both bombers detected the laser energy immediately and managed to execute simulated attacks against the target, a communications building in the Basra area. The GR7s flew an equally successful mission that night. TIALD operations and co-operative laser designating sorties with other aircraft ran very much according to plan thereafter (the third TIALD-capable GR7 arrived in theatre during the weekend of 21-22 February). The introduction of TIALD into frontline Harrier flying

was afterwards described as ‘an unqualified success, all the more impressive since it was introduced into sqn service whilst embarked’.

Underpinning all the increased flying activity in this period of Operation Bolton were the 101 Squadron VC10s based in Bahrain. For the VC10s, too, February 1998 was the busiest month of the entire operation. In the two years that followed the onset of the UNSCOM crisis in October 1997, they flew 721 operational sorties for a total of 2,413 hours. They dispensed 12,562 tonnes of fuel to 3,746 aircraft, including 2,682 Royal Air Force and Royal Naval aircraft, and 989 US Navy aircraft. The surge in activity during February 1998, when three tankers were deployed in theatre, is illustrated by the following table (see also Annex C):

	Monthly average, October 1997- September 1999	February 1998
Aircraft refuelled	156	420
Fuel dispensed (tonnes)	523.4	1061.4
Monthly sorties	30	73
Operational flying hours	100.5	238.55

While the military plans gathered momentum, last ditch diplomatic efforts were being made to avert war. By the second week of February, the diplomatic track was focusing on the UN Secretary General, Kofi Annan. A meeting between Annan and the P5 ambassadors determined that he should visit Baghdad to broker an agreement with the Iraqis in accordance with a series of agreed principles. This was a sound enough concept in theory, but it proved very difficult to find the necessary degree of consensus in practice. The principles drawn up by the United States, which were broadly acceptable to the UK, were said by France, Russia and China to be too prescriptive. Annan was eventually compelled to delay his trip to Baghdad to give the P5 more time to reach a common position.

The exact principles tabled by the US are not recorded but the British position, which was close to that of America, stressed the following.

1. That the final diplomatic effort to resolve the crisis was welcome.
2. That disarmament and verification must be completed before any consideration was given to lifting sanctions.
3. That Iraq should provide written acceptance of relevant UNSCRs.
4. That there should be no further obstruction of UNSCOM.
5. That UNSCOM was the sole authority with regard to the weapons inspections.
6. That a sub-group of UNSCOM, with different composition or additional observers, might conduct inspections of presidential sites.
7. That violation of these conditions would have the 'severest consequences for Iraq'.

Briefing the Security Council on 18 February, the Secretary General confirmed that the P5 had been unable to agree on any such detailed agenda. Nevertheless, on his visit to Baghdad, he would stress the need for full compliance with UNSCRs, for co-operation with UNSCOM and for the status and role of UNSCOM to be respected. He also said that the P5 had reached consensus on the possibility of establishing a special regime to inspect presidential residences. This would be the primary focus of his discussions. Further, he would make it clear to Iraq that no movement on sanctions would be possible before UNSCOM had finished its work and reported satisfactorily to the Security Council.

Annan completed his visit to Iraq by signing a Memorandum of Understanding (MOU) with Tariq Aziz on 23 February. In subsequent public statements, Annan and his spokesman expressed confidence that all members of the Security Council would be happy with the agreement. Nevertheless, when its contents became known, it was criticised in London and Washington as a 'bad and sloppy document' divergent from the advice given to the Secretary General before his departure for Baghdad. Although it reiterated Iraq's willingness to co-operate fully with UNSCOM and the IAEA, and to accord them immediate,

unconditional and unrestricted access to WMD-related sites, it also provided for the inspection of presidential sites by a 'Special Group', comprising UNSCOM/IAEA experts and diplomats, and headed by an UNSCOM commissioner. There were fears that this arrangement would erode UNSCOM's authority. Still, while several detailed questions remained unanswered, the Foreign Secretary and the US Secretary of State concluded that there was no clear basis for military action. The UK and the US would now work together to produce a new UNSCR codifying the agreement.

The deliberations over a UNSCR were plagued by the same disagreements that had delayed Annan's visit to Baghdad. The United States sought a resolution warning Iraq that she would face the 'severest consequences' in the event of non-compliance; this stipulation would be underpinned by a so-called 'snap-back' clause automatically providing for military action. Other UN Security Council members opposed this degree of automaticity and sought to ensure that any violation of the resolution would be considered by the Security Council before military action was authorised. They also hoped to offer Iraq a clearer path towards the termination of sanctions in return for her full co-operation with UNSCOM – a so-called 'light at the end of the tunnel'.

The Security Council could only agree to disagree on these issues. Resolution 1154 (1998), passed on 2 March, threatened Iraq with the 'severest consequences' if she failed to fulfil her obligation to accord immediate, unconditional and unrestricted access to UNSCOM and the IAEA, but did not contain a 'snap-back' clause. The overwhelming majority of Security Council members understood this to mean that a further UNSCR would be required before the initiation of military action if Iraq reneged on her obligations. The resolution otherwise reaffirmed the Security Council's willingness to review sanctions when Iraq complied with her obligations under resolution 687 and declared that 'by its failure so far to comply with its relevant obligations, Iraq has delayed the moment when the Council can so do'. This fell far short of the 'light at the end of the tunnel' language for which many Council members had been hoping.

On 5 March, the UNSCOM teams, including UNSCOM 227, returned to Iraq and started inspections of sensitive sites in the Baghdad area. By 2 April, they had inspected all eight presidential sites. Each of the 1,058 buildings within the sites was examined. Needless to say, most were empty and many had even been stripped of furniture. No prohibited items or

materials were found, although Iraqi officials objected to helicopter overflights of the sites and tried to impede access to certain documents.

British strategy throughout the crisis, reiterated in CDS's Directive to CJO on 20 January 1998, was 'to attempt to achieve full Iraqi compliance through diplomatic means. Should diplomatic means fail to resolve the crisis then HMG, in consultation with allies, may consider military means to force Iraq into compliance with UNSCRs.' On 6 February, the Prime Minister had stated: 'We remain committed to finding a diplomatic solution. No one wants to use force as long as there is a viable alternative available [but] ... diplomacy with Iraq can work only if backed by a willingness to use force. Saddam should be in no doubt that such willingness exists.'

By April 1998, it seemed that this approach had been very successful. Strenuous diplomatic efforts combined with a steady build-up of military – chiefly air – assets in the Gulf had apparently persuaded the Iraqi government to grant UNSCOM immediate, unconditional and unrestricted access to suspected WMD sites, and separate procedures had been introduced covering the inspection of presidential sites. Yet this did not raise any immediate prospect of an agreement between the UN and Iraq on satisfying the outstanding demands of UNSCR 687. Indeed, it is said that UNSCOM still expected its work to take years to complete. In February, even as efforts were proceeding to find a diplomatic solution to the crisis, Butler was presented with the first TEM report. Although Iraq had expected the TEMs to support its claims not to possess particular WMD capabilities, the report in fact raised serious concerns over her capacity to deploy the lethal VX nerve agent and certain prohibited types of warhead. While Iraq continued to deny the existence of these capabilities, there could be little hope of significant progress towards FFCD, and further confrontations between her government and the international community were practically inevitable.

In the immediate aftermath of the agreement, both the UK and the US decided that there should be no change of operational postures in the Gulf until Iraq demonstrated her willingness to comply with her commitments under the new UNSCR. Both the GR1s and the Harriers on board *Invincible* maintained their contribution to Operation Southern Watch. HMS *Illustrious* transited the Straits of Hormuz at the end of February and formally took over the Operation Bolton commitment from *Invincible*, while 1 Squadron passed on their role to 3 Squadron. Between their embarkation on 19 November and their hand-over to 3 Squadron

on 5 March, 1 Squadron flew a total of 510 sorties comprising 413 day sorties (495 hours) and 97 night sorties (164 hours). The total included 130 sorties for Operation Southern Watch and 14 for Operation Deliberate Guard. The remainder comprised training, weaponry, exercise and transit sorties.

No. 3 Squadron undertook work-up flying until the 4th, when they mounted their first Southern Watch mission. From the 8th, they operated with only two TIALD Harriers after the third was withdrawn to the UK for further trials work. Otherwise the Bahraini government enforced a single measure of force reduction. While the crisis continued, Bahrain had been willing to extend authorisation for the Nimrod R1 to operate from Muharraq. From there, the aircraft had conducted its normal reconnaissance and intelligence-gathering activities, while simultaneously improving co-operation with American electronic reconnaissance aircraft such as EP-3s and ES-3s and developing a concept of operations with US RC-135 Rivet Joints and EP-3s covering the eventuality of hostilities with Iraq. However, at the end of February, the Bahrainis registered their unwillingness to accept any further extension of the R1's deployment beyond 7 March, and the aircraft was compelled to leave on the 8th despite the efforts of the British ambassador. It was moved to Akrotiri, from where it continued to function in support of Operation Bolton until the 29th, transiting to an operating area over Saudi Arabia via Israeli and Jordanian airspace and refuelling from one of the VC10s still based in Bahrain.

In mid-March, the MOD was compelled to undertake a more general review of British force levels in the region. The Harrier was designed to operate in the northern hemisphere and could not fly from carriers in the Gulf between April and October because of the prevailing high ambient temperatures. It could only recover to carrier decks by hovering, which required the engine to work at near maximum performance – a performance that inevitably declined as temperatures rose. Even in February, it was necessary to cancel 1 Squadron sorties when occasionally the temperature reached 30°C. Launches for operational sorties were carried out at reduced fuel weights and, as further weight-saving measures, aircraft were stripped of their centre-line and outboard pylons and flew over Iraq with only one AIM9-M missile. Ultimately, as the air temperature climbed in the spring, the Harrier would lose the capacity to generate sufficient thrust to hover. The problem was exacerbated by the fact that the Harrier's weight had been increased over time by aircraft upgrades and the installation of essential additional systems. As there had been no parallel increase in engine

performance, the available thrust margin had been steadily eroded. The installation of a more powerful engine, the Pegasus 1161, had helped to address this problem in the United States, Spain and Italy and was under active investigation in the MOD, but there were no immediate plans to install it into RAF or Royal Navy Harriers at that time.

Clearly, then, the retention of *Illustrious* in the Gulf could serve no useful purpose. Yet if her withdrawal were not to result in the diminution of the UK's bombing capability, it would be necessary to enlarge the Tornado detachment in Kuwait from eight to twelve aircraft to compensate. Certain drawbacks were involved. Over an extended period there were likely to be problems of fleet and personnel management, given that a further twelve GR1s were located in Saudi Arabia and Turkey; moreover, the larger force would be expensive in itself, and costs would be increased further by the need to maintain two RAF tankers in Bahrain to meet the requirements of the two GR1 detachments operating over Southern Iraq. Also, once the additional aircraft were in theatre, it might be difficult to identify a suitable justification for their withdrawal. Nevertheless, the deployment promised to maximise the number of attack aircraft immediately available for operations, send a clear signal to Baghdad, and underline the UK's commitment to the UN weapons inspection process. The Secretary of State for Defence agreed to the dispatch of the additional GR1s and the withdrawal of HMS *Illustrious* on 23 March, and the Prime Minister's formal approval was received on the 29th.

The principal changes occurred in mid-April. Three additional Tornado GR1s flew to Kuwait on the 15th, bringing the total at Ali Al Salem to twelve and the total in theatre to 24. *Illustrious* left the Gulf the next day having disembarked eight Harrier GR7s and a single FA2 in Kuwait, from where the aircraft flew back to the UK. At the end of the month 113 RAF Regiment and RAF Police personnel were withdrawn from Ali Al Salem and the post of CBF Bolton reverted to a Group Captain appointment. Air Commodore Harris returned to the UK on 27 April.

Proposals for Force Reduction, April-October 1998

Any hopes that the passage of UNSCR 1154 (1998) might provide a lasting solution to the UNSCOM crisis soon proved illusory. In its aftermath, Butler sought to agree a clear path with the Iraqis towards the completion of UNSCOM's mission, while the US government

exerted a variety of pressures on the Commission behind the scenes to avoid the kind of intrusive inspections that had provoked confrontations in the past. Yet it proved impossible either to agree on a path towards FFCD or conduct inspections effectively without targeting locations to which the Iraqis were determined to block access. The inspections were halted completely in August and yet another crisis erupted.

In April 1998, when Butler reported to the Security Council on UNSCOM's work, he could reveal little progress in the six months since his previous report. This was primarily because of the two crises and Iraq's failure to answer many of UNSCOM's outstanding questions. Nevertheless, he began work on a so-called 'Road Map' detailing the information needed from Iraq to bring UNSCOM substantially closer to reporting her compliance with UNSCR 687. He presented the Road Map to the UN Security Council on 3 June, but the Iraqis produced a counter-brief for the Security Council two days later rejecting his plan. On the 11th, Butler travelled to Baghdad to meet Tariq Aziz, and a series of meetings then produced an agreement on a schedule of work for the next two months. However, Iraq refused to include in this schedule all the priority issues identified by UNSCOM.

In the meantime, UNSCOM came under growing pressure from the US government to curb its more inflammatory operations, notably those directed at the Iraqi concealment mechanism. A proposal to target the Iraqi presidential secretary, Abid Hamid Mahmoud, who was strongly implicated in concealment activities, was abandoned following the sudden withdrawal of western intelligence support; several more inspections aimed at the concealment mechanism were blocked by US intervention in July. Behind this more cautious approach lay the Clinton government's growing frustration over the extent to which their Iraqi strategy was being dictated by repeated confrontations between Saddam Hussein's regime and the UNSCOM weapons inspectors; Washington was understandably anxious to regain the initiative.

An obvious sign that the US would not contemplate another confrontation in the immediate future came on 7 May, when it became known that President Clinton had authorised force reductions in the Gulf. The USS Independence was withdrawn on the 24th, the B-52s left on 3 June, and E-3s, F-16s and F-117s followed them in the second and third weeks of the month. The US drawdown implied that any future large-scale military operation in the Gulf

would be preceded by a period of diplomatic activity; this in turn suggested that the UK military presence in the region should be reviewed.

The RAF was keen to reduce demands on the Tornado GR1 fleet and its support infrastructure. An associated problem was the Tornado GR1 midlife update programme, which was beginning to impact on frontline deployments. From December 1998, it was expected that the RAF would be unable to sustain a frontline deployment of 24 GR1s and allow roulement aircrews in Germany and the UK to train for operations. From a purely military perspective the RAF's preferred solution was to consolidate its GR1 fleet in the Gulf at either PSAB or Ali Al Salem, at the same time reducing the number of deployed aircraft to just six.

However, strategic and political arguments favoured the maintenance of detachments in both Saudi Arabia and Kuwait. Saudi Arabia was central to Gulf politics and vital to British economic interests. The presence of Western forces was an important factor in her defence, and the withdrawal of the Al Kharj GR1s might therefore have upset her government. If a British withdrawal offended the Saudis, it seemed possible that they might withhold the diplomatic clearances for overflight required to maintain the GR1 detachment in Kuwait; they might also be reluctant to readmit British forces in future. The value of Kuwaiti basing was no less tangible. Operating from Kuwait, the GR1s could fly offensive missions against Iraq. Consequently, the UK could send signals to Baghdad from Kuwait that were impossible to send from Saudi Arabia.

So, the RAF suggested solving the GR1 overstretch problem by replacing the PSAB GR1s with Tornado F3s and reducing the Ali Al Salem detachment from twelve to six aircraft. This was a logical reorganisation given the impossibility of conducting offensive missions from Saudi Arabia. If the Americans wished to retain the PSAB reconnaissance operation in theatre, it could be relocated to Ali Al Salem.

PJHQ and the CFBF supported the proposals for reducing the Tornado force at Ali Al Salem from twelve to six aircraft. As there was now no immediate prospect of war with Iraq, there was no short-term role for the Ali Al Salem detachment to fulfil. The reduction of US SEAD assets in theatre would also limit UK operations in the Southern NFZ. The reconnaissance missions flown by the Tornado GR1s from Saudi Arabia were likely to receive priority, being

of more immediate value to Operation Southern Watch than the simulated attack profile training sorties normally flown from Ali Al Salem.

PJHQ argued that it was necessary to retain a presence at Ali Al Salem, for the Kuwaitis had been generous in their provision of host-nation support and had received assurances that at least six UK aircraft would remain there until October; but there did appear to be scope for halving the size of the detachment. The proposed reductions might take place following the next UN review of sanctions against Iraq on 25 June.

Ministers duly received the force reduction proposals on 26 June. It was suggested that the GR1 detachment at Ali Al Salem be reduced from twelve to six aircraft during the second half of July. There was now said to be declining regional support for military action against Iraq and 'growing pressure, especially from the Saudis, to see major force reductions'. US forces in the Gulf were being cut to below their pre-crisis levels, and any future confrontation with Iraq over UNSCOM was likely to give rise to a protracted period of diplomatic activity before hostilities were contemplated. Hence, there would be ample time to enlarge the Ali Al Salem detachment again if necessary. In the meantime, flying opportunities for non-essential Operation Southern Watch activities were proving too limited, and there was also a need for measures to reduce pressure on the GR1 force that went beyond the replacement of the Northern Watch GR1s with Jaguars, which had recently been scheduled for October 1998.

The matter was eventually referred to the Prime Minister himself, who agreed on 9 July that discreet preparations could begin for implementing the reductions, pending a final decision later in the month. Mr Blair was concerned that the withdrawal would take place shortly before Butler's next visit to Baghdad at the beginning of August, when further difficulties with the Iraqi government were expected. It was important not to send the wrong messages to Iraq at this juncture. In response, PJHQ could do little more than apply for diplomatic clearance for the GR1s to fly through Saudi airspace on their return to the UK.

A date for the drawdown was provisionally set for 22 July – a schedule confirmed by the MOD on the 17th – but it was only on the 22nd that the Prime Minister agreed to the reductions, with the intention of informing Parliament the following day. Then, on the 23rd, a further dispute broke out between Iraq and the Security Council. During an inspection on

18 July, UNSCOM found an Iraqi document containing an account of the use of chemical and biological weapons during the Iran-Iraq war. It stated that Iraq had expended 8,151 chemical weapons during the war rather than the 12,865 weapons which it claimed to have used, leaving 4,714 unaccounted for. The Iraqi authorities promptly seized back this paper and refused to comply when the Security Council demanded its return to UNSCOM. The Prime Minister therefore rescinded his decision on the Tornados' withdrawal, intending to review the issue on the 27th. However, this was far too close to Butler's visit to Baghdad, so the planned drawdown was again placed on hold.

On 3 August, Butler duly journeyed to Baghdad to discuss with Tariq Aziz the two-month programme of monitoring and inspection work agreed in June. Butler's assessment was that, while some progress had been made on missiles and chemical weapons, very little had been achieved on biological weapons. In response, Aziz declared that talks could only proceed if Butler agreed to inform the Security Council that Iraq had met its disarmament obligations. Butler said that he was unable to do so, and the talks broke down. Two days later, Iraq effectively abrogated the agreement reached with the UN Secretary General in February and suspended all co-operation with UNSCOM and the IAEA other than on monitoring activities. The Iraqi action created an immediate crisis because a series of surprise inspections had been scheduled for the days following Butler's meeting with Aziz, but an open confrontation between UNSCOM and the Iraqi authorities was avoided after the US Secretary of State put pressure on Butler to cancel the inspections.

UNSCR 1154, adopted by the Security Council on 2 March, had stated that any failure to accord immediate, unconditional and unrestricted access to UNSCOM and the IAEA in conformity with UN resolutions 'would have the severest consequences for Iraq'. In other words, such a failure would probably result in the use of force, under UN auspices, against Iraq. Yet the direct Iraqi violation of UNSCR 1154, of the MOU drawn up by the UN Secretary General, and of the previous UN resolutions concerning her disarmament, did not occasion an immediate military response from the UN. The Secretary General informed Tariq Aziz that Iraq's position was in violation of UNSCRs, and the Security Council issued a press statement describing the Iraqi action as totally unacceptable and in contravention of UNSCRs, but Council unity on the issue was extremely fragile; Russia, France and China all sought to weaken the statement's text.

It soon became clear that Iraq was intent not only on halting UNSCOM inspections but on hampering the *monitoring* activities of both UNSCOM and the IAEA too. Against this background the UN Secretary General sent a special representative to Iraq to urge a resumption of co-operation, and Butler wrote to Aziz proposing that UNSCOM be allowed to resume its work and that they (Butler and Aziz) restart their dialogue. Aziz rejected these proposals outright, stating that Iraq no longer trusted Butler and that working with UNSCOM was futile. In an attempt to employ some form of leverage against Iraq other than the threat of force, the United States then proposed a new UN resolution suspending the Security Council's periodic reviews of sanctions. However, with the support of the Secretary General, other Security Council members suggested inducing Iraq to co-operate by initiating a so-called 'comprehensive review' of her compliance and non-compliance with UN resolutions on her disarmament since 1991. A further UNSCR numbered 1194 was unanimously adopted on 9 September suspending further sanctions reviews indefinitely, but the Security Council also agreed to the Secretary General's proposal for a comprehensive review.

September and October 1998 witnessed lengthy deliberations within the Security Council and between the Security Council and Iraq over the resumption of UNSCOM inspections and the start of the comprehensive review. The US and the UK were determined that the review should not begin until Iraq resumed full co-operation with UNSCOM and the IAEA, and they argued that this co-operation should be demonstrated over a period of six to eight weeks before the review started. On the other hand, the Secretary General suggested that the review might start two weeks after Iraqi co-operation was renewed, and his stance received support from other Security Council members, including France and Russia.

On 14 September, Iraq's National Assembly recommended to the Iraqi leadership the suspension of all UNSCOM and IAEA activities if the Security Council did not revoke Resolution 1194. The British government concluded that Saddam Hussein was likely to answer their call and that the US would then resort to military action. The US State Department advised that UK participation in such an operation would be welcome but that the US would act unilaterally if necessary.

The Foreign Office did not welcome the prospect of a combined US-UK attack on Iraq, which seemed unlikely to receive Security Council or regional support.

A US/UK attack without Security Council or regional support, and with no clear legal basis, would be widely seen as another example of cowboy action in disregard of international law, which could do our interests in the region (and more widely) immense damage.

Moreover, military action appeared unlikely to destroy Iraq's suspected WMD capability (although it might set it back), or remove Saddam Hussein, nor would it lead to a resumption of UNSCOM/IAEA inspections. At the same time, it might be exploited by Saddam, who could portray himself as a victim of American and British aggression, unsupported by the international community, and so boost his campaign to erode sanctions despite Iraq's failure to disarm in accordance with UN resolutions. In the Foreign Office's view, it seemed wiser to keep working through the UN Security Council for the restoration of UNSCOM while offering Iraq a 'light at the end of the tunnel'.

In the event, the Iraqi government made no immediate response to the National Assembly's recommendation. Instead they sought to promote the argument that Iraq had fully complied with all UN resolutions on her disarmament, that there could be no resumption of UNSCOM and IAEA inspections, and that the comprehensive review should begin forthwith. On 30 October, the UN Security Council finally agreed outline terms of reference for the comprehensive review. These offered the prospect of a clear statement of the steps that Iraq would have to take to meet its obligations under UN resolutions, and a timeframe for these steps to be completed, assuming full Iraqi co-operation.

Operation Desert Viper

The very next day the Iraqi government finally announced that it was ceasing all co-operation with UNSCOM. So began the chain of events that culminated in Operation Desert Fox in December. The UN Security Council immediately condemned Iraq's decision as a flagrant violation of UN resolutions and of the February MOU and unanimously adopted Resolution 1205 on 5 November, repeating this condemnation, demanding that Iraq resume full co-operation with UNSCOM and the IAEA, and reiterating the Council's full support for both organisations. The resolution also confirmed that the offer of a comprehensive review remained open if Iraq resumed co-operation.

Some Security Council members argued that Resolution 1205 did not authorise the use of force against Iraq. However, both the United States and the UK now decided that military action would have to be taken unless Iraq backed down. Where the UK was concerned there was never any doubt about the form such action would take. On 3 November, in answer to a question in Parliament, the Foreign Secretary stated:

We have a dozen Tornados already in the Gulf, and we have maintained that presence ever since the previous crisis. We are confident that we have the basis on which, if required, we could put them into use.

Notwithstanding the Foreign Office's recently expressed concerns, the government now agreed that UN authorisation to use force against Iraq was inherent in the threat of 'severest consequences' contained in Resolution 1154 earlier in the year. It was also maintained that the authorisation to use force given by the Security Council in 1990 could be revived if the Council decided that there had been a sufficiently serious breach of the conditions laid down for the ceasefire. Resolution 1205 did not state that Iraq was in 'material breach' of those conditions but nevertheless condemned the Iraqi decision to cease co-operation with UNSCOM as a 'flagrant violation' of its obligations.

What exactly could military action be expected to achieve? The Ministry of Defence's response to this question focused entirely on the perspective of the United States. Washington's objective was said to be coercion to make Saddam Hussein return to full co-operation with UNSCOM. Otherwise, if he refused to do so, air strikes would contribute to the goal of disarmament by bringing about a reduction in Iraq's WMD regeneration and concealment capability and its ability to threaten neighbouring countries. The US target list therefore continued to include buildings identified as WMD-related facilities as well as air defence and command, control and communications centres and Iraqi offensive capabilities close to Kuwait. The US also had the wider objective of maintaining the credibility of the international community (and US credibility in particular) against Iraq and other states considered to be defying international law.

The success of an operation against Iraq would, according to the MOD, be measured using the following criteria:

The overall tests for success would be whether Iraq returns to full cooperation with UNSCOM, either with or without the use of force; or alternatively whether Saddam is significantly weakened as a result of the attacks and whether his capability to produce and deliver Weapons of Mass Destruction is significantly set back. More widely, the tests of success will be whether Saddam is seen to emerge significantly weaker and thereby to have lost ground in his struggle to escape international constraints; and whether more generally international order and the enforcement of minimum international standards of behaviour are strengthened or weakened.

The MOD was 'reasonably confident' that the military aims of the operation could be achieved without significant coalition casualties; substantial military damage would be inflicted on Iraq. But there was no certainty that the Iraqi government would resume co-operation with UNSCOM – only wishful thinking:

Since sanctions will remain in place until UNSCOM is restored, and since there would always be the prospects of further use of force should Saddam seek to regenerate his WMD capability, Saddam ... should return to co-operation with UNSCOM since this is the quickest route to the restoration of normality.

Yet, as the Foreign Office had argued in September, military action could in some ways be counterproductive. There was a risk that Saddam's standing would be enhanced if he could portray Iraq as a martyr for the Arab cause, unless international opinion could be persuaded that he had brought the confrontation on himself. Hence it would be necessary to demonstrate that the international community as a whole (and not just the US and the UK) had been forced to take military action to prevent him rebuilding WMD capabilities and jeopardising peace in the region. Saddam might also claim that the damage inflicted on Iraq was excessive and inhumane – something that had to be considered when targets were selected and Rules of Engagement finalised.

The UK had in fact been compelled to re-examine the possibility of military action in the Gulf as early as 4 August, after the breakdown of talks between Butler and Aziz. On that date, a forward planning directive was issued to PJHQ warning that a further confrontation with Saddam Hussein at the end of October might possibly lead to war. It also confirmed that the

Cabinet Office, the Foreign Office and the MOD were again reviewing British strategy towards Iraq. PJHQ was directed to draw up military options to support this strategic planning effort. The three primary objectives involved bringing Iraq into compliance with disarmament UNSCRs, destroying her WMD capability and restoring UNSCOM's inspection and monitoring regime.

The status of RAF forces in the Gulf at this time was as follows. They were commanded by CBF Bolton, who exercised OPCON of assigned forces and delegated TACON to the US Joint Task Force Commander, Operation Southern Watch. The much-discussed reduction of aircraft numbers in the Gulf had been placed on hold. Twelve GR1s equipped with TIALD and Paveway LGBs were still based at Ali Al Salem while six GR1s equipped for medium-level tactical reconnaissance were located at PSAB. Two VC10 tankers were operating from Muharraq, Bahrain. In addition, there were some 172 US aircraft and nine French aircraft in theatre. Since the February crisis, there had been one further Operation Argentic Nimrod R1 deployment to Bahrain (in June), after which the Bahrainis once again refused permission for Nimrod missions to be flown from their soil. At the end of the month, PJHQ sent out a team to examine the suitability of bases in Qatar and Kuwait, and Qatar was duly selected for the next Argentic operation. The Nimrod arrived in Doha on 26 October and commenced operational flying two days later, returning to Waddington via Akrotiri on 5-6 November.

Operational flying continued much as before, although intermittent serviceability problems arose with both tankers and some of the GR1s. A four-aircraft mission was flown daily from PSAB for six days per week, with the seventh day serving as a 'down' day. At Ali Al Salem the rate of operational flying had been reduced to four sorties per day for five days, followed by eight operational sorties per day for two days, but a contingency sortie rate was envisaged of twelve operational sorties per day for five days with a 'surge' capability of sixteen operational sorties per day on two days out of the five. In all, there were some 711 British military personnel at HQBFB and at the three air bases – 35 at Eskan, 383 at Ali Al Salem, 41 at Muharraq, and 252 at PSAB. Additional manpower to sustain more intensive flying rates was on NTM in the UK. In close collaboration with the Kuwaitis, steps were being taken to improve the Ali Al Salem base, including repairs to the northern runway, the construction of aircraft sun shelters, the provision of air-conditioned accommodation and the establishment of a dedicated RAF Operations Centre.

The major basing issue at this time concerned the location of the GR1 reconnaissance operation. The reconnaissance missions flown by the GR1s were vitally important to the coalition. Their high-quality tactical imagery was of exceptional value to the US, which possessed no comparable capability, and it helped to buy the RAF access to the US targeting apparatus – a concession denied to other coalition air forces. Located at PSAB, the future of the operation was in doubt. As we have seen, the Saudis had imposed rigid restrictions on the launch of offensive air operations from their bases, and it was thought that they might also prevent reconnaissance flights during an offensive campaign. By contrast, the Kuwaitis did not apply any such restrictions. It was therefore proposed that the reconnaissance task be relocated to Ali Al Salem. This would have the added advantage of consolidating GR1 reconnaissance and bombing operations at a single base. A force of twelve GR1s could undertake both tasks, potentially allowing the UK to withdraw from PSAB altogether. If it was necessary to maintain a presence there for political reasons, Tornado F3s could replace the GR1s. Either course would help to reduce pressure on the GR1 fleet.

The challenge lay in ensuring that British communications systems were capable of transmitting reconnaissance imagery from Kuwait to the Joint Task Force Headquarters with the necessary speed and reliability. As soon as this was ascertained, it would be possible to move the entire reconnaissance operation to Ali Al Salem. Until then, the plan was to establish an interim capability at the airfield using a mobile Reconnaissance Intelligence Centre (RIC).

Inevitably, the UK's response to the renewed tension with Iraq at the beginning of August had to be closely aligned with America's position. At first, the US opted not to embark on another military build-up in the Gulf, preferring to await further reports from UNSCOM and clarification of the UN Security Council's stance. The general perception was that hostilities were unlikely in the short term. The US Secretary of Defence declared that, if necessary, a military response would be undertaken using forces already in theatre. This was very much in accordance with the principal contingency plan current at the time, which had been labelled Operation Desert Aluminum. It consisted of a three or four-day campaign employing TLAM and air strikes, with manned air missions assigned to both American and British forces. The plan could be executed at 24-hours' notice, using the forces located in the Gulf and was well known to both the CBFB and PJHQ.

Desert Aluminum remained the basis of coalition planning throughout August and September, while expectations of a likely date for military action against Iraq continued to focus (albeit speculatively) on the end of October. It must therefore have come as something of a shock to the CBFB when, on 6 October, a number of Paveway bombs dropped during training by the Ali Al Salem GR1s (then drawn from 14 Squadron) fell short of their intended targets by between 800 and 1,500 feet. Opportunities for intensive LGB training in the RAF had been limited throughout the 1990s by the non-availability of TIALD pods, bombs and suitable ranges; the majority of pods and bombs procured were committed to operations or trials. One result was that very little feedback had been obtained on bombing accuracy from the little training that had taken place. However, in the spring of 1998, HQ 1 Group and DAO had instituted a somewhat more rigorous training regime for laser-guided bombing and an enhanced system for reporting results. On 6 October, it had been planned that 14 Squadron would release six Paveway II bombs over the Udairi range in Kuwait – the first occasion that the squadron (a dedicated TIALD squadron) had had the opportunity both to designate and deliver the bomb since 1995. The exercise was halted after the first four bombs missed their aiming points.

Investigations subsequently revealed that the Pulse Repetition Frequency code²¹ employed in all four attacks was incompatible with the 400-series TIALD pods with which 14 Squadron GR1s were equipped. This defect, which had been present, undetected, since the TIALD 400 series was introduced, guaranteed that attacks would fail with the laser code selected on 6 October. It was quickly and easily rectified following trials at West Freugh. The Ali Al Salem GR1s achieved a 100 per cent hit rate during their next training mission on 21 October, but this was cold comfort to those 14 Squadron aircrew who had deployed to the Gulf back in February. As one squadron report recorded,

The prospect of dropping PW II and PW III was very real [in February]. It was our intention at that time to use a designator code of 1732; none of our weapons would have guided, collateral damage implications would have been immense and aircrew would have been put at risk for no purpose.

When the crisis with Iraq erupted on 31 October, 14 Squadron was in the process of handing over the Ali Al Salem commitment to 12 Squadron. The Americans soon confirmed that they were considering an operation on the lines of Desert Aluminum – subsequently renamed

Desert Viper – and the Secretary of Defence told his British counterpart on 3 November that military action might be initiated ‘in about two weeks’. This left London expecting that Desert Viper would begin on 17 November, and most UK planning was conducted on this basis. PJHQ decided that no extra UK combat aircraft were needed in theatre, but the increased likelihood of hostilities now made the rapid establishment of a reconnaissance capability at Ali Al Salem far more important. A 41 Squadron mobile RIC could achieve operational status within 120 hours of a decision to deploy. Six Hercules sorties would be needed to transport six RIC Air Transportable Air Reconnaissance Laboratories (known as ATRELS), 21 personnel, three VICON pods (and associated spares) and an engineering support cabin to Kuwait. Six TIALD GR1s and six VICON GR1s would then be stationed at Ali Al Salem, the VICON GR1s doubling up as bombers. On 4 November, PJHQ requested the Secretary of State’s permission to deploy the mobile RIC on the 12th-13th – the earliest date possible given Saudi Arabia’s diplomatic clearance procedure. Formal authorisation was received the next day.

On 6 November, steps were also taken to increase manpower levels at HQBFB, Ali Al Salem and Muharraq. At the height of the UNSCOM crisis in February, some 550 British personnel were deployed at Ali Al Salem out of a total of around 1,000 personnel in the Gulf overall on Operation Bolton. The number was subsequently reduced to reflect the decreased likelihood of military action. The surplus personnel returned to their normal units but remained under CJO’s operational command and at short notice to redeploy if necessary. To restore the operational posture achieved in February, it was now proposed to send 24 additional staff to HQBFB (including Air Commodore Harris), 61 operations and support personnel and 120 force protection personnel to Ali Al Salem, and thirteen personnel to Muharraq. A media operations team was also to be established. The extra manpower would include sufficient aircrew, groundcrew and headquarters staff to permit 24-hour operations. Their deployment, requiring four Hercules sorties and two VC10 sorties, was formally approved on the 10th and scheduled for 14-15 November. It was envisaged that both the augmentation force and the mobile RIC would be in place and fully operational by the 17th, but events would soon demonstrate that this timetable was not entirely in step with American plans.

No. 12 Squadron deployed twelve crews for the twelve aircraft based at Ali Al Salem. The aircrew were split into three teams numbered A, B and C, each with four aircraft. Flying commenced on 2 November, when four GR1s conducted an Operation Southern Watch

mission over Iraq using TIALD for simulated laser-guided bombing attacks with Paveway II and III. Southern Watch tasking was supported by a variety of US assets, as usual, including F-15s for DCA, F-16CJs for SEAD, EA-6Bs for electronic counter-measures and E-3Cs for airborne warning and control. Signals intelligence (SIGINT) support came from such platforms as the RC-135 and the RAF's Nimrod R1. From 3 November, each flying day typically included a Southern Watch mission in the morning followed by training sorties at both medium and low level in the afternoon, including TIALD training at Kuwait's Al Abraq range. There were two surge days per week, when the squadron was required to mount two Southern Watch missions simultaneously.

As tension increased in the second week of November, the Iraqis began dispersing military assets and redeploying SAMs and anti-aircraft artillery (AAA) systems to several sites in the Southern NFZ. No. 12 Squadron executives now began informal planning meetings with the Americans at Al Jabba airbase, Kuwait, where it was determined that the UK contribution to Desert Viper should be three four-aircraft attack waves on each night of the operation, employing TIALD and Paveway II and III. If the Saudi authorities prevented the PSAB GR1s from fulfilling their reconnaissance role, missions would be flown from Ali Al Salem instead. The Squadron began flying reconnaissance sorties on 11 November and commenced medium-level night training over Kuwait, while six 617 Squadron crews were put on readiness to deploy to Kuwait to fly day reconnaissance missions if this became necessary.

In the meantime, the US Defence Secretary ordered a further 129 aircraft to the Gulf, bringing the total number of US aircraft in the region to over 300, and hastened the movement of the carrier Enterprise with a further 75 combat aircraft. Some 3,000 US ground troops were also dispatched, and the American government again requested the use of Diego Garcia for the USAF's B-52s. Air Commodore Harris arrived in theatre on 12 November, when the initial movement of the augmentation force also began. He was surprised to learn that Desert Viper was scheduled to commence on the 14th, two days earlier than expected, but he found that in-theatre commanders were briefed on American intentions and had made all the necessary arrangements.

CDS now advised the US Chiefs of Staff that he had authorised offensive operations by British forces, acting as part of a coalition force, subject to the Prime Minister's formal approval. In the Gulf, the various RAF units were brought more fully into the US planning

process. The 12 Squadron executives attended a further meeting at Al Jabba on 11 November and held a co-ordination meeting with the US Navy on board the USS Eisenhower on the 13th. The Commander-in-Chief of the Joint Task Force Southern Watch briefed the CBFB in full on US plans, and the US Master Attack Plan was transmitted to HQBFB and to the Force Commander at Ali Al Salem.

By 13 November, UNSCOM had withdrawn completely from Iraq. Saddam Hussein had offered no concessions, and hostilities seemed inevitable. In the Gulf itself, the Kuwaitis were fully supportive of British and American policy, including the possible use of military force, and Bahrain had adopted a similar position in the UN Security Council, although not in public. The Saudi government, while opposed to military action unless it could remove Saddam Hussein, had authorised the use of Saudi-based support aircraft (not combat aircraft) in the event of coalition air strikes.

That day CDS issued a revised directive to CJO reaffirming the British government's determination to prevent Iraq from 'maintaining or developing a WMD capability that would threaten the region and international order' and its aim of ensuring Iraq's full compliance with UNSCRs and the restoration of monitoring and inspection by UNSCOM and the IAEA. This was to be achieved by diplomatic means if possible but by armed force if necessary: 'The aim of any military action would be to coerce Iraq into compliance with its UN obligations.' The military end state would be:

A Saddam Hussein significantly weaker, both politically and militarily, and with his WMD programme substantially set back, so that even if UNSCOM is not immediately reinstated, the world would be in a better position than if Saddam was allowed progressively to curtail UNSCOM's activities.

As the GR1s at PSAB were unable to participate in offensive action against Iraq, the aircraft at Ali Al Salem were to be the sole RAF tactical assets involved in Desert Viper. By the evening of 13 November, 12 Squadron had been placed on 24-hour warning for live operations, the lead and deputy-lead crews in each four-aircraft team having achieved sufficient TIALD expertise for all planned missions. The initiation of formal authorisation procedures for military action then began, culminating in the issue of an 'execute' signal to the Gulf at midnight.

The US ATO was received and passed to PJHQ and Ali Al Salem in the early hours of 14 November, and the targets were then checked to ensure that they complied with UK targeting criteria. By midday, the Ali Al Salem aircrews and engineers were planning and bombing up for their three missions, which were scheduled to bomb at 1600, 1805 and 2205 local time. At 1345, the Prime Minister telephoned the Force Commander at Ali Al Salem to confirm that he had authorised the use of British forces and to wish the crews the best of luck. Team A was fully briefed and ten minutes from walking when, at 1350, the C-in-C JTFSW informed the CBFB that the operation had been halted for 24 hours.

In a subsequent interview with the press, the Ali Al Salem Force Commander, Group Captain Vincent, described how he had broken the news to the GR1 crews. 'There was a stunned silence, then what you could call a palpable release of tension.' The Group Captain said that in 26 years of service in the RAF he had never known a mission to be abandoned at such a late stage. One of the aircrew described the episode as 'the closest call you could possibly imagine'.

We had been psyching ourselves up for it all day. I had never experienced such a roller-coaster feeling. When the Group Captain came into the briefing room, we thought it was going to be a last-minute pep talk before going into action. You could have heard a pin drop when he told us it was all off. We couldn't believe it.

When word reached the VC10 aircrew at Muharraaq at 1400, they were actually about to board their aircraft. US B-52s armed with CALCMs were already airborne but were recalled just hours before their attack was due to commence.

Why was the operation halted? On the 13th, the UN Secretary General had written to Saddam Hussein in a last-ditch attempt to avert hostilities, appealing to him to comply with his obligations under UNSCRs. Only hours before air strikes were scheduled to start, Tariq Aziz replied, stating that Iraq was prepared to resume cooperation with UNSCOM and the IAEA immediately. This was enough to ensure that military operations were placed on hold. Attached to Aziz's letter was a list of nine points that appeared to be conditions at first. These were immediately rejected by the United States and the UK. However, whereas US forces then renewed their preparations for Desert Viper, it appeared that the British Tornados might

be withdrawn from the operation. For a brief period, there was the potential for a harmful rift to develop between the two allies, and some planning was actually conducted for US-only air strikes. Fortunately, the position was soon clarified, allowing the CBFB to advise his American counterparts that the UK remained fully committed.

During informal consultations lasting some five hours on the evening of 14 November, the UN considered its response. The US, UK and Japan sought clarification of three particular points: whether access for UNSCOM and the IAEA was unconditional and unrestricted, whether Iraq's declarations of 5 August and 31 October had indeed been rescinded, and whether the nine points attached to Aziz's letter were linked to Iraq's resumption of co-operation. As the discussions progressed, two further letters were circulated from the Iraqi Ambassador to the Security Council (Nizar Hamdoon) to the President of the Security Council (Peter Burleigh, the US Ambassador). Hamdoon's second letter stated that the nine points were not conditions but merely reflected the aspirations of the Iraqi Government. The letter went on to state: 'These views are not linked to the clear and unconditional decision of the Iraqi Government to resume co-operation with UNSCOM and the IAEA.'

The United Nations Security Council was anything but united in its deliberations over the Iraqi climb-down. All except the US, the UK and Japan were ready to accept Aziz's letter and Hamdoon's clarifications as a basis for sending UNSCOM and the IAEA back to Iraq. Russia, France and China urged the Council to issue a positive response to the Iraqi letters and sought to isolate the US and the UK. The Russian Ambassador (Lavrov) circulated a draft press statement (which he later turned into a draft resolution), which was vigorously supported by France and China. After Hamdoon's second letter appeared, Council discussions were suspended to allow further consultations between capitals.

The next day, the Prime Minister publicly confirmed that he had authorised and then halted air strikes on Iraq. The Iraqi government had provided assurances of renewed co-operation with UNSCOM and the IAEA; it had also rescinded the withdrawal of co-operation announced on 5 August and 31 October. UNSCOM inspectors would in future be allowed to carry out the full range of their activities in compliance with UN resolutions. Nevertheless, he warned that the UK remained ready to participate in military action if Iraq's promises turned out to be empty. 'There will be no further warning whatsoever.'

Later that day President Clinton spoke to the media, announcing that he had suspended military action because Iraq had backed down. But he identified five benchmarks for measuring Iraq's future actions and stressed that the use of force remained an option if Iraq fell short of those benchmarks when UNSCOM returned. He required Iraq to:

- a. Resolve all outstanding issues with UNSCOM and the IAEA;
- b. Allow unfettered access for UNSCOM, with no restriction or qualification, consistent with the Annan/Aziz MOU of 23 February 1998;
- c. Hand over all relevant documents required by UNSCOM/IAEA;
- d. Accept all WMD-related UNSCRs;
- e. Avoid interference with the independence or professional expertise of UNSCOM.

The Security Council met on 15 November and subsequently issued an agreed statement to the media. The Council underlined that their confidence in Iraq's intentions had to be established by unconditional and sustained co-operation with UNSCOM and the IAEA 'in exercising the full range of their activities provided for in their mandates, in accordance with the relevant Resolutions and the MOU of 23 February 1998'. They also reaffirmed their readiness to proceed with the comprehensive review, once the Secretary General confirmed (based on reports from UNSCOM and the IAEA) that Iraq had returned to full co-operation.

This apparent resolution of the crisis was not entirely welcome to the UK. Although the Iraqi climb-down clearly vindicated the British and American strategy of underpinning diplomatic pressure with the threat of force, one contemporary British military appraisal suggested that it represented a major success for Russia, France and China:

The climb-down by Saddam and its acceptance by the UNSC has swung the initiative away from the US and UK who, until this point, had general support (or understanding) for military action. With an agreement struck, the use of military force, without a further substantial Iraqi violation, could isolate US/UK within the Security Council and regionally ... The Arab states (with the

exception of Kuwait) are pleased with the outcome, Saddam forced to climb down and under pressure to comply with the UN, but without military action being taken.

UNSCOM now planned to return to Iraq on 17 November.

Operation Desert Fox

There was now some relaxation of military postures in the Gulf. Although the Iraqi stance remained defensive, Republican Guard units and SAM batteries deployed before the crisis returned to their normal locations. American reinforcements authorised for Desert Viper were cancelled, but a number of aircraft flown out for the operation remained in theatre. They included seven B-52s (at Diego Garcia) and four B-1s (at Thumrait, Oman). The USS Eisenhower carrier battle group left the Gulf before its replacement group, led by USS Enterprise, had passed through the Straits of Hormuz.

Some British augmentation personnel were withdrawn, and the CFBF post again reverted to a Group Captain appointment. However, there was no reduction in the number of aircraft. Indeed, after a further refusal from Bahrain to provide basing, a Nimrod R1 deployed to Kuwait on 22 November and flew the first Operation Argentic mission to be mounted from Kuwait International Airport the next day. At the same time, the RIC sent to Ali Al Salem for Desert Viper became fully operational, and a suitably robust imagery transfer capability was established between Ali Al Salem on the one hand and HQBFB and PJHQ on the other.

As the UNSCOM inspectors began returning to Iraq on 18 November, Richard Butler addressed two letters to Tariq Aziz seeking the release of WMD-related documents. These included the paper seen by UNSCOM in July concerning chemical weapons expenditure during the Iran-Iraq war. Butler also requested new information on Iraq's biological warfare programme. The Iraqi Deputy Foreign Minister replied on 20 November, refusing to provide any of the documents and demanding that remaining disarmament issues be dealt with by the UN Security Council in the comprehensive review. He denied the existence of specific documents and maintained that others had previously been requested; supposedly, Iraq had already responded by clarifying the issues they dealt with. Butler then wrote back to Tariq Aziz, requesting a more constructive response. On the 24th, he briefed the Security Council

on the exchange of letters and promised to report on all areas of UNSCOM's work in mid-December. Russia blocked a British proposal that the Council President should express concern over Iraq's refusal to provide the requested documentation.

The final phase of the UNSCOM crisis began on 8 December, when Butler's staff commenced yet another series of intrusive inspections. It is not clear whether the timing of these inspections was agreed with Washington, but they were certainly welcomed there. The US position was that any short-term military action against Iraq would have to be conducted within a 'window' between 14 and 19 December, before the beginning of Ramadan. If the new round of inspections demonstrated that Iraq was still unwilling to co-operate fully with UNSCOM, there would be sufficient opportunity to initiate Desert Viper within this time scale.

On 9 December, UNSCOM sought to inspect the Ba'ath Party headquarters. The Iraqis immediately declared the site as sensitive and demanded that the UNSCOM team adhere to a series of redundant modalities for sensitive site inspections that had been negotiated by Butler's predecessor, Rolf Ekeus, in June 1996, and renegotiated by Butler himself in December 1997. Under the Ekeus modalities, only four inspectors would have been admitted to the site. UNSCOM responded that Iraq had agreed after the previous crisis to grant immediate and unconditional access; the Ekeus modalities no longer applied. After a two-hour stand-off, the UNSCOM team withdrew. The Iraqis subsequently claimed that the headquarters was a political site and was therefore off limits to UNSCOM. The British assessed that the Iraqi tactics were transparently designed to delay access to the site, so thwarting UNSCOM's attempts to find WMD-related material.

There were further problems the next day when an UNSCOM team was delayed for 45 minutes while the Iraqis argued about sensitive site modalities. The team eventually entered the site only to discover that it had been swept clean. The Special Security Organisation (SSO) office – the target of the inspection – had been moved to another location that the Iraqi authorities refused to disclose. On the 11th, another team was prevented from entering a suspected chemical weapons site on the entirely novel grounds that the inspection was taking place on a Friday! Not surprisingly, the preliminary British view of these events was that Iraq's co-operation could not be described as 'full'. The US assessment was very similar. On 8 December, CENTAF had mentioned to PJHQ the possible deployment of

seven additional B-52s to Diego Garcia 'to "beef up" the number of CALCMs in theatre', and the Pentagon announced on the 10th that these aircraft were being dispatched. Although they were described as replacement aircraft for the B-52s flown out in November, this measure would double the American CALCM capability in the Gulf during a transitional period – 14-19 December – when both detachments would be based on the island. This coincided with the planned 'window' for Desert Viper.

The UNSCOM inspections planned for 12 and 13 December were cancelled. On the 15th, Butler submitted his promised report to the Secretary General of the UN describing how Iraq had restricted or obstructed his commission's work since the November crisis. He concluded:

As is evident from this report, Iraq did not provide the full co-operation it promised on 14 Nov 98. In addition, during the period under review, Iraq initiated new forms of restrictions upon UNSCOM's work. Amongst UNSCOM's many concerns about this retrograde step is what such further restrictions might mean for the effectiveness of long-term monitoring activities. In spite of the opportunity presented by the circumstances of last month, including the prospect of a Comprehensive Review, Iraq's conduct ensured that no progress was able to be made in either the fields of disarmament or accounting for its prohibited weapons programmes. Finally, in the light of this experience, that is, the absence of full co-operation by Iraq, it must regrettably be recorded again that UNSCOM is not able to conduct the substantive work mandated to it by the Security Council and, thus, to give the assurances it requires with respect to Iraq's prohibited weapons programmes.

The Secretary General submitted Butler's report to the Council President late on 15 December. His covering letter stated that, while the IAEA had received the necessary level of co-operation from Iraq, UNSCOM had not enjoyed full co-operation. Annan suggested that the Security Council might wish to consider three possible options:

1. That there was not sufficient basis to move forward with a comprehensive review.
2. That Iraq should be allowed further time to demonstrate full co-operation.
3. That the Security Council proceed with a comprehensive review.

It is difficult to see how Butler could have reported to the Security Council in any other terms. Nevertheless, he was heavily criticised by Russia and China in the ensuing debate on 16 December. That day the UNSCOM teams were once again withdrawn from Iraq. Speaking in Parliament the Prime Minister declared that there existed the necessary legal authority for military action in view of Iraq's failure to meet its post-Gulf War obligations and its behaviour towards UNSCOM since 1997.

The Iraqis now declared their highest military alert state, and all deployed US forces in theatre were similarly brought to readiness. The enterprise carrier battle group had by this time reached the Gulf and a second carrier group was approaching; 15 B-52s were available for operations from Diego Garcia. At Ali Al Salem, 12 Squadron had been mounting two Southern Watch missions per day, one for TIALD training and the other for reconnaissance; they had also continued air combat and bombing training at the Al Abraq range. By the second week of December, all aircrew in theatre were TIALD combat ready. In the meantime, it became clear that US Southern Watch staff were revising their plans for Operation Desert Viper, but the new plan was at first withheld from HQBFB. Although this was said to reflect considerations of operational security, HQBFB staff detected lingering doubts among their American counterparts concerning the UK's commitment to renewed operations following her apparent withdrawal from Desert Viper in November. It was only on 10 December that the Americans produced a copy of the RAF section of the revised target list and the first formal indication of impending operations did not appear until the evening of the 14th. Ministerial authorisation to participate in military action with US forces (subject to a final 'execute' signal) was subsequently received from London together with a list of UK-approved targets and revised ROE. The CBFB was not shown the Master Air Attack Plan for the operation, now named Desert Fox, until late on the morning of 15 December, and the US authorities continued to withhold details of planned TLAM missions. The Ali Al Salem and PSAB detachment commanders and key headquarters staff were only warned

of British involvement on the morning of 16 December. In the afternoon, the CAOC issued an ATO tasking American and British forces against Iraqi military installations and suspected WMD sites. The 'execute' signal duly reached Ali Al Salem at 1857Z.²²

Operation Desert Fox involved attacks against eight principal target sets. Industrial sites were targeted to degrade the production of prohibited weapons while strikes on Iraq's security forces focused on elements believed to be responsible for regime security and for the security and concealment of WMD equipment and documents. The other targets were higher command and control, Republican Guard, airfields (to degrade Iraq's assault helicopter and L-29 unmanned air vehicle (UAV) force, as well as her higher value fixed-wing aircraft), economic (to disrupt illegal oil exports), air defence and SAMs. The operation began at 2200Z, while the UN Security Council was still in session. The first wave of strikes was executed by US carrier-based bombers and US TLAM launched from ships in the Gulf. These attacks continued until about 0130Z (0430 local) on the morning of the 17th. US and British land-based aircraft were not involved. France chose not to participate, and the French Air Force flew its last Southern Watch sorties on 16 December. French personnel were invited to leave the CAOC within ten minutes of the start of Operation Desert Fox.

The first mission conducted by 12 Squadron was launched shortly after dark on 17 December against targets in the heavily defended Basra area. Four GR1s were involved, including one designated as a spare. Their 'package' otherwise comprised four F-18 and two F-14 escorts, two F-18s for SEAD, one EA-6B for electronic warfare (EW) and one EC-135 for electronic intelligence (ELINT). In good weather, the formation held over north-east Kuwait before flying west to the Iraqi border. On the approach to the target area, the SEAD F-18s launched missiles at planned intervals to suppress Iraqi SAMs; they appear to have been successful as the attack aircraft afterwards encountered only light AAA around the target.

The first pair of Tornados had been tasked against a Low Blow radar at an SA-2 site south-west of Basra, but they found that the radar had been moved elsewhere and replaced by a Perfect Patch control van. This was attacked and destroyed using co-operative designation; some impressive secondary explosions were recorded on the TIALD video. The second pair attempted to attack a Spoon Rest radar at the same location but were forced to abort after their TIALD pod became unserviceable. The first pair then flew on to the Rumaylah area,

where they accurately bombed a radio relay site. The designating aircraft then organised a co-operative attack with one aircraft from the second pair but misidentified its target. One bomb hit the selected Desired Point of Impact (DPI) but the other missed by 20 metres.

The second mission of the operation was part of a similar package that was launched against four targets at Tallil air base – an L29 UAV storage hangar, a hardened aircraft shelter, a radio relay control building and a communications mast. When the package was about ten minutes from the target area, an Iraqi SA-6 was called active and the SEAD aircraft launched a number of HARM suppression missiles. There were no further SAM indications, but the GR1 crews did record AAA well below their altitude. The subsequent attacks were very successful: the three buildings were demolished and the mast, although left standing, was assessed as functionally destroyed.

The third RAF mission of Operation Desert Fox was tasked against four targets within the Al Kut brigade headquarters. EA-6B coverage for this mission was only available for a limited period of time and this fact, together with a shortage of serviceable TIALD pods (the squadron at first had a total of just five pods), persuaded the GR1 aircrew to 'double dimp' their targets. The first and third aircraft, which were equipped with TIALD pods, would fly close behind the second and the fourth, designating their bombs co-operatively before self-designating their own weapons. This meant that there would be a period when both sets of bombs were in the air, the first set under laser guidance, the second set initially unguided. The mission took off at 2042Z and transited uneventfully to the target area, but a hostile reception awaited them. Seven minutes prior to the first attack, the package's SEAD aircraft launched HARMs, and heavy AAA fire began, reaching a maximum altitude of 16,000 to 18,000ft – not far below the GR1 operating altitude of 20,000 to 22,000ft. The sky was filled with red and white tracer and starburst explosions; the GR1s received radar warning receiver indications of Roland SAM guidance and initiated appropriate countermeasures.

The first TIALD aircraft successfully lased the target – a battalion headquarters building – for one of the bombers. It appeared that the bombs had been released into the laser basket but they landed approximately 0.65 NM north of their indented DPI. The TIALD aircraft then attempted a self-designating attack on another DPI but the bombs again failed to guide. This was due to a laser operating error by the navigator.

The second TIALD aircraft successfully designated for the other bomber but misidentified the DPI so that the intended target, a third headquarters building, was left undamaged. In the subsequent self-designating attack, the aircraft released its bombs outside the laser basket so that they failed to guide. During their return transit towards the Iraq-Kuwait border, all four aircraft received indications that they were being scanned by SA-3s, and one performed evasive manoeuvres and jettisoned its under-wing tanks after receiving a missile guidance warning. The GR1s afterwards recovered to base safely. The fundamental lesson of this unsuccessful mission was clear: although 'double dimping' might be practicable in training, it was a far more difficult tactic to execute in a live operational environment characterised by heavy AAA fire and SAM guidance warnings. It would have been better to confine the mission to just two DPIs and employ conventional co-operative or self-designation. Ideally all aircraft should have been equipped with TIALD pods for self-designation.

The next day, by scheduling longer intervals between the three missions, it proved possible for nearly all aircraft to carry TIALD pods and conduct self-designating attacks. The first mission was tasked against targets at Tallil air base – a Low Blow radar, another Perfect Patch van, an air defence command building and a headquarters. Bombs narrowly missed the radar and the command building, causing some damage, and two direct hits destroyed the headquarters; however, another very near miss was assessed not to have damaged the control van. The second mission targeted the Al Kut barracks divisional and brigade headquarters. One strike was thwarted by smoke obscuration from another coalition attack, but the other GR1 targets were destroyed.

The final mission that day was tasked against headquarters and tank storage facilities at Al Kut Republican Guard barracks. After a TIALD-equipped GR1 became unserviceable, only three of the four aircraft executed self-designating attacks, the fourth relying on co-operative designation. Its bombs were successfully guided on to the correct DPI, but the crew of the designating aircraft failed to identify their target. They then attempted to bomb a similar building, but the bombs fell wide. The third aircraft hit its target with one bomb but the other landed 200 metres short, while the bombs released by the fourth aircraft failed to guide.

On the last day of the operation, four GR1s again attacked Al Kut, using self-designation in a mission that was particularly notable as it involved the first operational use of Paveway III;

each aircraft carried a single bomb. The formation proceeded to the target area in good weather but then encountered a barrage of AAA on their final approach. Three of the four GR1s hit their targets, which included a third Perfect Patch van and brigade headquarters buildings, but the fourth aircraft misidentified its target and then guided its bomb into an open area of desert to avoid collateral damage. The second GR1 formation was forced to return to base shortly after take-off when the EA-6B accompanying their package began to experience technical problems, and the third mission was recalled when the Ali Al Salem force commander learnt that Operation Desert Fox was to be terminated at 2300Z.

In total, the GR1s flew 28 attack sorties during Operation Desert Fox. Of these, 12 (42.9 per cent) achieved direct hits with all their bombs, while the total number of DPLs that sustained direct hits was 15 (53.6 per cent). In all, 52 bombs were released by the GR1s during the operation - 48 Paveway IIs and four Paveway IIIs. Some 23 Paveway IIs (47.9 per cent) and three Paveway IIIs (75 per cent) hit their intended DPLs; 24 bombs missed their targets causing no damage. Of the 13 DPLs that were not hit directly, two were damaged by near misses. Three sorties hit the wrong DPL and one was aborted due to the unserviceability of a TIALD pod. Hence, on seven occasions (25 per cent), aircraft missed their targets due to failures in the operation or functional performance of the TIALD/Paveway combination. Three of these misses occurred during the single attempt at 'double dimping' and one occurred during the first operational use of Paveway III. However, the hit rate for Paveway III during that mission was 75 per cent, which appears very creditable in the circumstances. Accepting that 'double dimping' was misconceived and that a perfect hit rate with a brand new bomb was never very likely, it can reasonably be argued that the operation or functional performance of TIALD/Paveway might have given legitimate grounds for concern where only three sorties (10.7 per cent) were concerned (see Annex B).

The 51 Squadron Nimrod R1 was not employed on Desert Fox until the third day of the operation, 19 December, when the aircraft abandoned its strategic role completely to focus on combat-support tasking. According to the Squadron Operations Record Book, the 'rear operating crew had a lot of interesting intercepts'. Still, the prevailing impression contained in the documents is of an opportunity missed. As the coalition only possessed four electronic reconnaissance aircraft in theatre, the failure to employ the Nimrod on 17 and 18 December meant that a quarter of this strength was redundant for two-thirds of the Desert Fox period. Detachment personnel afterwards complained that staff at the Southern Watch

headquarters at Eskan were unfamiliar with the Nimrod R1's capabilities, and that connectivity limitations prevented the aircraft from being fully integrated into US-led operations. It was also felt that intelligence acquired by the Nimrod was not properly processed or disseminated at Eskan or PJHQ. Nevertheless, along with other missions flown during the crisis period, the operation was felt to have been valuable in improving the utilisation of new equipment and in encouraging the development of new procedures and new thinking on the employment of Nimrod R1s in the Gulf. This was particularly true where co-ordination between the Nimrod and other intelligence-collection assets was concerned.

Unlike Operation Desert Storm nearly eight years before, Desert Fox did not enjoy very widespread international support. Immediately after hostilities began, Russia requested a meeting of the UN Security Council to discuss Iraq, and both Russia and China then criticised the American and British air strikes and called for an immediate halt to military action. They also maintained their critique of Butler, connecting his report to the subsequent use of force. Late on 17 December, Russia recalled its ambassadors from Washington and London 'for consultations'. The majority of other Council members held Iraq responsible for the situation but also regretted the use of force, yet the British ambassador to the UN reported that there was no indication of an active proposal to bring the military action to a halt. In his view, the overwhelming mood was one of resignation. It was generally agreed that Iraq was primarily to blame, and none of the Arab states at first chose to criticise the initiation of Desert Fox. Although Syria, Lebanon and Iran became more critical later, Saudi Arabia, Kuwait, Bahrain, Egypt and Jordan all stated privately that they were comfortable with military action despite refusing to support the operation openly.

The French Foreign Minister was publicly sceptical about the efficacy of the air strikes; in his view, the sooner they ended the better. He also claimed that a diplomatic solution could have been found. Nevertheless, he did acknowledge that the Iraqi regime bore primary responsibility for the crisis. In the UN, the Russians circulated a draft presidential statement on Iraq and again called for military operations to cease. China was supportive but other Security Council members urged the need for a thorough discussion of the issues and, above all, a consensus to re-establish the credibility of the Council. The United States and Britain successfully blocked further Russian efforts to initiate ceasefire action through the UN. Hence, although few countries actively backed Desert Fox, media speculation that it was halted early because of international pressure appears to have been unfounded. The

truth is that the operation was always planned as a limited three or four-day campaign, which had to be implemented before Ramadan started on 20 December.

At the time, there was no consensus about the effectiveness of Operation Desert Fox. RAF aircrew were noticeably doubtful in the immediate aftermath of the operation, telling the media that the air strikes had ceased before all targets had been attacked. One pilot posed the question, 'Have we really changed anything?'

A lot of the guys don't think we have. A number of our targets did not seem to have much significance to us. While we may have dented Saddam Hussein, the general feeling is that we have not really changed anything.

By contrast the Prime Minister announced that coalition objectives had been achieved.

A preliminary battle damage assessment of the operation was completed on 31 December. It recorded that some 66 targets had been selected from six of the main target sets, comprising 207 target elements; of these, 200 were considered to be critical. In all, 175 target elements had been hit (85 per cent) including 171 critical target elements (86 per cent). Higher figures were recorded for suspected WMD industry and security target elements and Republican Guard target elements, but only 65 per cent of airfield target elements had been hit. In addition, Iraqi air defences (including SAMs) had been divided into 100 targets comprising 289 target elements of which 278 were listed as critical. During Desert Fox, 219 of these target elements (76 per cent) had been hit, including 211 critical target elements (76 per cent).

The assessment concluded that the attacks on industrial targets had set back Iraq's missile programme by 1-2 years. Desert Fox destroyed static testing facilities and a tunnel used for missile testing, while assembly, process flow forming, milling and computer buildings were also damaged or demolished. Industrial support to Iraq's missile programme was substantially degraded, and the Ministry of Industry and Military Industrialisation headquarters building was damaged beyond use. Within the security targets, the coalition hit all selected Special Republican Guard (SRG) and SSO sites, some 17 SRG facilities being damaged or destroyed, and both the SSO and the Directorate for General Security

headquarters buildings were demolished. The many casualties inflicted on the Iraqi armed forces and security organisations included several generals and a head of intelligence.

Strikes against Iraqi command and control had damaged all targeted leadership facilities and some visible symbols of regime power, such as a presidential complex, and disrupted command, control and communications between the National Command Authority and military leaders. The Iraqi armed forces had been compelled to employ backup communications. Republican Guard divisions had sustained casualties and equipment losses and extensive damage to their headquarters infrastructure, and it was judged that their operations would be disrupted for some time; but dispersal prior to Desert Fox had enabled key formations in the Baghdad area, such as the Medina Division, to retain their basic operational capability.

Operations against the Iraqi air defence system were assessed to have been successful as no coalition aircraft were lost. SAM firings had only been carried out autonomously, to minimal effect, and Iraq's central air defence command and control had been denied a clear air picture. Repeater stations, operations centres, advance warning sites and radio relay stations had all sustained physical and/or functional damage, and communications had been extensively disrupted or severed altogether. Seven SAM sites had been struck and two SAM equipment repair and storage facilities severely damaged. Coalition targeting had rendered inoperable most of the units comprising the 147th SAM Brigade, located in southern Iraq.

The PJHQ assessment of Desert Fox, which measured the effectiveness of the operation against national (UK) objectives, can best be quoted verbatim:

Objective 1 – Reduce Iraq's ability to threaten its neighbours. **Partially effective.** Although the combat power of the RGFC²³ has largely been unaffected, support and command and control elements have sustained moderate to severe damage. Iraq's WMD missile RDT&E²⁴ and production programme has been degraded by 30%. The southern Iraqi air defence system is largely ineffective: there is little, if any, national direction of active defence in the south. EW activity dropped to zero at the beginning of the campaign but has returned to normal levels. The L-29 (UAV) programme is severely degraded. It is unlikely that Iraq is capable of invading any of its neighbours,

but it still has the capability to strike neighbouring countries with tactical or strategic conventional and WMD missiles.

Objective 2 – Delay Iraq's weapons of mass destruction programme. **Successful.** All key industrial installations were struck with moderate to severe damage on most elements. Some key facilities – wind tunnel, missile engine test stand, assembly buildings, component production facilities – were destroyed or damaged to such an extent as to preclude reconstitution of missile RDT&E and production for 1-2 years. That said, sources indicate that most equipment and materials within targeted elements were likely to have been evacuated from facilities prior to strike. The L-29 UAV WMD delivery programme has been degraded as L-29 hardened maintenance and storage hangars were destroyed. The security administration's ability to provide security, transport and concealment service for the WMD programme has been degraded, but long term functional impact is minimal.

Objective 3 – Reduce Saddam Hussein's ability to maintain control of his regime. **Short term – marginal success; long term – unsuccessful.** With 11 primary national level C2 facilities either destroyed or seriously damaged, there are indications that Iraq's National Command Authority (NCA) experienced severe degradation in communications and was forced in many cases to transmit communications over HF radio. That said, Saddam's main pillars of support – the RGFC, and SRG – are still highly capable of protecting the regime and controlling other government functions, despite having to use alternate communications and operating from alternate/dispersal sites. There has been no significant effect on the national telecommunications network outside Basrah. Effective communications can be reconstructed in a week, but replication of the damaged Iraqi fibre optic, coaxial and civil microwave systems will require 6 months. Saddam Hussein is unlikely to be overthrown as a result of these attacks and he remains capable of issuing orders to the air defence network.

Additionally, Desert Fox did not coerce Iraq into complying with UNSCRS, nor did it restore monitoring and inspection by UNSCOM and the IAEA. However, as we have noted, there

was no very confident expectation by the end of 1998 that it would do so. Indeed, in describing Washington's position on 19 December, President Clinton confirmed that UNSCOM would no longer be the central focus of American policy towards Iraq. In future the US would work with a coalition of allies to support an alternative strategy of 'containment' and, while he would welcome UNSCOM's reinstatement, it would first be necessary for the Iraqi government to show through concrete actions that it was prepared to co-operate. 'Containment' in practice meant the maintenance of the NFZs, the continuation of sanctions alongside the oil-for-food programme and support for Iraqi opposition groups. Presumably, too, it meant that the US would in future rely on its own intelligence-gathering capabilities (and perhaps those of allies such as the UK and Israel) to monitor any WMD-related activity in Iraq.

The Aftermath of Desert Fox

On 22 December, Operation Southern Watch resumed. The first mission was cancelled because a relocated SA-2 was detected on the route of the reconnaissance package. The next day, the first mission was curtailed because of Iraqi no-fly-zone violations by Foxbats and the detection of a possible SAM trap. On 30 December, six SA-6s were launched at a Southern Watch package. Unarmed elements of the package withdrew, including the RAF GR1s, and USAF F-16s then attacked the SAM site with HARMs and LGBs. Three days later, another Foxbat flew within ten miles of the Saudi border close to the flight path employed by US RC-135s. The Nimrod R1 detachment commander subsequently wrote of this period:

Post-DESERT FOX the situation in theatre had radically changed: threats from Iraqi ac against the HVAA²⁵ as they made incursions into the No-Fly Zone and the setting up of SAM traps below the 33rd parallel were an obvious response by the Iraqi regime.

Nimrod sorties were now mounted with greater care, a preliminary intelligence picture being constructed from Kuwaiti airspace until the arrival of DCA fighters on Southern Watch missions. Only then could the Nimrod venture into potentially more hazardous environments.

On 5 January, there was a co-ordinated violation of the Southern NFZ by Iraqi aircraft – part of what was now very clearly a deliberate attempt to challenge the legitimacy of the NFZs and lure coalition aircraft into missile engagement zones. In response, in separate engagements, USAF F-15s and US Navy F-14s launched air-to-air missiles at Iraqi MiG 25s without hitting them. The next day there were two further violations of the Southern NFZ by Iraqi aircraft.

On 10 January, the US and the UK issued démarches to Iraq. The American démarche, which was also communicated to Doha, Ankara, Cairo, Amman and Gulf Co-operation Council capitals (and London), described Iraq's violation of the NFZs, including the movement of at least eight additional SAM sites into the Southern NFZ. It considered that Iraq's movements and activities threatened coalition aircraft patrolling the NFZs, posed a potential threat to Iraq's neighbours, and were provocative in nature. The démarche concluded by warning that the USA intended to respond to Iraq's threats to US personnel by taking such action as was necessary to protect them, and that, if action was taken, targets would be military in nature and threat-related. The British démarche was similar and confirmed likely UK participation in any American response to NFZ violations. Both countries then changed the ROE for their forces in theatre to enable them to respond to Iraqi violations in accordance with the warnings given.

The British ROE had previously permitted engagement in pre-emptive self-defence in certain specified circumstances, but the new ROE stated:

CBF Bolton is authorised to conduct offensive operations against Iraq as directed by the US chain of command where the risk of collateral damage is assessed to be no higher than medium ... South of 33 degrees north you are authorised to attack Iraqi surface-to-surface, surface-to-sea and surface-to-air missile systems, and military aircraft or helicopters on the ground which present an immediate or emerging immediate threat to coalition forces where the risk of collateral damage is assessed as no higher than medium ... UK aircraft are also authorised to attack Iraqi surface-to-air missile targets south of 33 degrees north which have been deployed, repaired or rebuilt.

Surface-to-air missile (SAM) targets include SAM radars, transporter erector launchers, missile resupply vehicles, anti-aircraft batteries, man-portable air defence weapons and early warning and target acquisition radars where these are associated with SAM systems. Details of all targets attacked or to be attacked under the terms of this signal are to be passed to MOD as soon as possible.

The UK and US démarches set the tone for Operation Southern Watch until its conclusion in 2003. In May 1999, the MOD and the Foreign Office together endorsed the strategy of containment exercised primarily through the NFZs. And so RAF Tornados continued to patrol the southern zone alongside the American air forces (France formally withdrew her participation from Southern Watch on 3 January). Iraqi violations of the NFZs similarly continued, and there were further sustained efforts to shoot down coalition planes. By August 1999 there had been nearly 200 violations of the northern and southern NFZs by Iraqi aircraft since Desert Fox and almost 300 ground-to air threats had been reported, such as missile or anti-aircraft artillery firings, or illumination of aircraft by SAM guidance radars. Coalition responses had been invoked on 92 days and attacks had been launched on nearly 300 targets with 1,070 bombs. RAF Tornados from Kuwait had hit 23 targets (comprising many more target elements), expending 85 bombs. The MOD correctly advised Downing Street at this time: 'There is little prospect of an early end to this activity.' By November, British and American aircraft had faced some 725 threats and had dropped 1,450 bombs, and the disadvantages of the post-Desert Fox environment were becoming all too clear. As one succinct analysis put it, 'We have reached a 'tit for tat' position.'

Saddam retains much of the initiative and the ability to escalate or de-escalate the confrontation as it suits him. There is no sign that he is about to back down. Coalition patrol patterns have become fairly predictable and as this tit for tat continues, so does the risk of losing an aircraft or an incident of significant collateral damage. At the same time, we run the risk of damaging regional and international support for our wider policy.

There was no obvious answer. US and UK planners were confronted with the problem of finding a medium between operations that were sufficiently tough to deter the Iraqi challenge on one hand, and sufficiently restrained to prevent international criticism on the other. It

remained all too easy for Iraq to present herself in the international arena as the victim of American and British aggression. The only solution lay in mounting operations that were effective but low in both intensity and media profile. While this made obvious sense, it did also contribute to the tendency of both the media and the public at large to underestimate the level of effort that the RAF and the American air forces – primarily the USAF – expended on maintaining the NFZs.

Although command relations between the coalition partners had been strained in the later months of 1998, they recovered in the following year. By the spring of 1999 British targeteers were working alongside their American colleagues in the Joint Task Force Southern Watch targeting cell, British personnel were being shown all imagery and targeting information, and a UK Intelligence Messaging Network (known as UKIMN) terminal was being installed there to facilitate the transfer of such information between US and British intelligence personnel. The CBFB was often shown briefings and plans intended primarily for US eyes, and also attended the Joint Task Force Commander's daily video conference and Joint Target Co-ordination Board with CENTCOM, NAVCENT AND ARCENT.

The Nimrod R1 detachment that commenced in November 1998 and endured throughout the period of Desert Fox and its aftermath finally came to an end on 7 February after one roulement of aircrew and some 33 operational sorties. Thereafter, 51 Squadron resumed their periodic Operation Argentic deployments to the Gulf. For the UK, there were otherwise two basic changes in the deployed force structure to sustain the Southern Watch commitment. First, the PSAB GR1s were replaced by F3s; second, at the very end of 1999, the Ali Al Salem detachment was reduced from twelve to eight aircraft.

The proposal to deploy F3s to PSAB had been submitted back in June 1998 to reduce pressure on the GR1 fleet and to satisfy the Foreign Office's concern that a British presence in Saudi Arabia should be maintained. In October, a reconnaissance team dispatched to PSAB to examine its capacity to support F3 operations concluded that it was a suitable operating base. If six F3s deployed to PSAB, it would be possible to launch two aircraft on a regular basis to satisfy particular DCA tasks. However, 'given historical serviceability and the harsh aircraft operating conditions, the ability to meet successfully any 4 aircraft DCA tasking will be severely constrained.'

At the end of the month, PJHQ thought that it might be possible to swap the GR1s for F3s at PSAB between mid-December and January, but the November crisis intervened. It was not until the 27th that the Secretary of State was asked to agree to the changeover; he did so in principle three days later. In the intervening period, as we have noted, a robust reconnaissance and imagery transfer capability was established at Ali Al Salem, removing one of the main obstacles to the GR1s' withdrawal from PSAB. A revised Operation Order for Operation Bolton covering the F3s was issued in January 1999, while a revised directive from CJO to the CBFb appeared on 9 March. The military objectives of Operation Bolton were now defined as follows:

Your primary objective is to execute military operations in support of Operation SOUTHERN WATCH. The aim of any offensive military action would be to conduct pre-emptive self-defence against possible missile threats south of 33°N, respond in an appropriate manner to any IRAQI infringement of the NFZ, and promote IRAQ's compliance with its UN obligations. This action would diminish significantly SADDAM's ability to threaten his neighbours, coalition forces enforcing the NFZ and UNSCRs, and international order through his WMD and other military capabilities.

The desired end state for the operation read:

HMG seeks compliance by SADDAM HUSSEIN with relevant UNSCRs, and, in due course, the orderly recovery of all UK reinforcements. If diplomacy fails and HMG contributes to a coalition US-led offensive military campaign, we seek a SADDAM HUSSEIN significantly weaker, both politically and militarily, with his WMD programme substantially set back and his ability to remain in power severely curtailed if not destroyed.

The RAF decided to rotate the Southern Watch commitment through the five frontline F3 Squadrons on a two-monthly roulement; 25 Squadron would be the first F3 squadron to deploy to PSAB. They were scheduled to arrive in theatre in the second half of February and commence operational flying at the beginning of March. In January, six aircraft were selected for the task and squadron engineers then worked intensively to prepare them to the required standard, which included eight missiles (four Skyflash and four Sidewinder),

two external fuel tanks, a new towed radar decoy system and chaff and flare dispensers. In the meantime, aircrew undertook training sorties with the F3s in operational configuration and practised SAM evasion at the Electronic Warfare Training Range at Spadeadam and AAR from KC-135s. They also attended lectures on threat familiarisation and combat survival and rescue. The first F3 arrived in theatre on 16 February, and the remainder deployed during the following two weeks. Local training sorties began immediately, and aircrew also received extensive briefings on operations and procedures before commencing operational flying on 3 March. At any one time, some seven crews would be detached to PSAB, but a mid-March roulement meant that, in all, 14 crews from 25 Squadron participated in Operation Bolton during the month. Overall, the detachment flew 40 operational sorties for 137 hours, and 37 training sorties for 67 hours.

Sadly, this first F3 deployment to the Gulf since Operation Granby in 1991 was very poorly documented by 25 Squadron, but they soon handed over the Operation Bolton DCA commitment to 5 Squadron, who fully realised the importance of ensuring that a detailed account of their contribution was placed on permanent record. Their Forms 540 for April, May and June 1999 describe many aspects of early F3 Southern Watch operations from PSAB. No 5 Squadron undertook a similar work-up to 25 Squadron's, involving fast jet affiliation and air combat training, helicopter affiliation, EW training, gunnery, missile firings, NVG, AAR, combat survival and rescue and threat familiarisation. About half the squadron's available aircrew (seven crews) then deployed to PSAB, the plan being to replace them with the remaining qualified crews during the second half of the detachment, which was planned to finish in mid-June. Most ground crew deployed by the squadron remained at PSAB throughout the detachment. After a time, the OC 5 Squadron decided that the normal mission rate could be handled by six crews and obtained HQBFB's approval to return one crew to the UK.

From 15 April, 5 Squadron flew one DCA mission every day (apart from an occasional 'down' day), during which a pair of aircraft mounted a roving combat air patrol (CAP) inside Iraqi airspace. To operate the two-aircraft CAP, four F3s would normally be manned and started up prior to each mission; three of these would actually take off while the fourth remained in dispersal as an engines-running spare. The crew manning this aircraft had to be prepared to adopt any of the three positions in the formation in case one of the others became unserviceable. With three aircraft airborne and confirmed as fully serviceable, the fourth

crew was stood down. The three airborne F3s refuelled from an RAF VC10 just south of the Saudi-Iraqi border, and two of them subsequently crossed into Iraqi airspace to mount their CAP. The third remained with the VC10 as an airborne spare that could replace either aircraft on CAP at short notice.



RAF Tornado F3s at PSAB

The F3s flew as part of the first daily Southern Watch package, which consisted of a variety of USAF aircraft, including E-3s, RC-135s, F-15s, F-16s, EA-6Bs and a fleet of tankers – USAF KC-10s and KC-135s and RAF VC10s. US naval aircraft from the Carl Vinson and Kittyhawk carrier groups also maintained a presence in the Southern Watch area of responsibility. The US SEAD support was of particular importance to the F3s. Designed for operations in the northern hemisphere, they struggled in high ambient temperatures, and the heavy Operation Bolton configuration made matters worse, compelling them to fly at altitudes that were well within the engagement envelopes of most Iraqi SAM systems. F3 missions began with the establishment of a so-called ‘backstop’ CAP for between one hour and 75 minutes along the 31 degrees north parallel in support of the F-15s and F-16s, which operated along the 32 degrees north parallel (although the F3s also ventured up to the more northerly parallel in May). Then, after refuelling, they would position themselves to protect the USAF aircraft as they withdrew to the south and provide a CAP for some of the high-value air assets in the package. Working with the E-3s, both the F3s and the F-15s exploited their Joint Tactical Information Distribution System (or JTIDS) capability to improve the situational awareness of the entire DCA force.

During April, 5 Squadron flew 45 operational sorties for 137 hours and 7 support (primarily training) sorties for eight hours on Operation Bolton. Three missions were cancelled because of bad weather but none were prevented by aircraft unserviceabilities. In May, 68 operational sorties were flown and six training sorties; in June they completed another 27 operational sorties and three training sorties before passing the Bolton commitment to 11 Squadron. On average, five of the six deployed aircraft were available each day for operations. The squadron’s engineering detachment was sustained by extensive second-line provisions, including support vehicles, ground servicing equipment and avionics facilities. Such delays as occurred in the rectification of engineering faults resulted from manpower constraints or the unavailability of crucial spares in theatre; although the F3s deployed with a large priming equipment pack,²⁶ it was often still necessary to fly spares out from the UK. The sixth aircraft in the detachment was sometimes ‘robbed’ for unavailable spares to keep the other five serviceable. The main engineering problems affected the F3’s avionics and were primarily due to the high temperatures in theatre. Unserviceabilities were sufficiently frequent to ensure that the aircraft maintained as airborne and ground spares were regularly employed.

Iraqi aircraft periodically launched minor incursions into the NFZ but otherwise avoided presenting any serious challenge to the coalition. More threatening were Iraq's ground-based air defence systems. Such SAMs as were launched against coalition aircraft during the 5 Squadron detachment were unguided and inaccurate, but more accurate AAA was recorded on several occasions. At the beginning of May, for example, an F-15 formation flying at 32,000ft encountered extremely accurate 85mm and 100mm anti-aircraft fire. The Iraqis were suspected of plotting the tracks of coalition aircraft by observing their IFF returns, but there was another problem: Southern Watch missions were becoming too predictable. The CAOC instituted measures to limit the use of IFF and deny targeting information to the Iraqi gunners, but the problem of predictability was more difficult to solve and remained under discussion at the highest levels for much of the year.

The reduction of the Tornado GR1 force at Ali Al Salem took longer and at first seemed to repeat the sequence of events of the previous summer. Considerations of aircrew training and GR1 fleet overstretch during the mid-life upgrade period lay behind the first proposals to scale down the Ali Al Salem detachment, which appeared in July 1999. As the Chief of the Air Staff (CAS) put it later in the year,

The primary issue is training. We are not generating enough flying at home bases to meet the training requirements of our frontline Tornado crews and operational standards are slowly and remorselessly being degraded. The consequence is increased risk to our aircrews. The cause is simple: too few aircraft available at home, too many deployed.

Although UK offensive dispositions in the southern Iraqi theatre remained at the augmented level of twelve aircraft reached during the crises of the previous year, the Ali Al Salem GR1s were capable of meeting their reconnaissance and attack commitments with ten. Moreover, the reduction of US forces to their pre-crisis levels provided ample justification for at least some British withdrawals. Yet the Defence Staff did not consider such a small drawdown worthwhile, and PJHQ was soon afterwards directed to examine the impact of cutting the Ali Al Salem detachment to eight GR1s. Their response concluded:

The withdrawal of 4 GR1s from AAS would necessitate reductions to both the sustained and contingency effort. There would be no surge capability and we

would be unable to mount a DESERT FOX type operation without reinforcement. In addition, our tactical flexibility and redundancy would be limited and, realistically, the number of DMPs²⁷ that could be attacked during an RO²⁸ would be just 2, although this reflects the most common tasking rate. On the positive side, in addition to returning 4 aircraft to the frontline, the detachment could be reduced by 2 (possibly 3) Combat Ready aircrews and 25 engineers. This would reduce the GR1 force's overall level of commitment and allow a single sqn to cover the operation rather than a sqn plus. Moreover, during a period of increased tension it would enable a strong political message to be sent by reinforcing back to 12 aircraft (although DIPCLEAR remains a potential problem for rapid reinforcement). CINC CENTCOM and CC JTF-SWA²⁹ are aware of the proposal to reduce to 8 GR1s, and are content for the reduction to go ahead.

The Defence Staff considered that the operational penalties described here were acceptable and 'a price worth paying for the relief it would offer to the GR1 fleet both in terms of manpower and airframes'. This specific point was made in a submission to the Secretary of State for Defence on 17 September, which duly recommended the reduction.

Then politics and diplomacy intervened once again. During the summer of 1999, the UK and the US had been attempting to secure the return of UN weapons inspectors to Iraq. By September, they were lobbying to persuade the Security Council to accept a new UNSCR on weapons inspection that maintained sanctions until Iraq was declared to be free of WMD, whereas Russia and China were arguing that the sanctions regime should be dismantled. This was the situation when the proposals to reduce the GR1 force at Ali Al Salem reached the Secretary of State. As it seemed possible that British and American resolve over Iraq might be called into question by the withdrawal of aircraft during the negotiations at the UN, he decided to withhold his authorisation for the time being. He agreed to reconsider the issue in the light of progress with the SCR.

In October, the Secretary of State for Defence, George Robertson, was elevated to the peerage and appointed Secretary General of NATO; he was succeeded by Geoffrey Hoon. Soon afterwards, the issue of withdrawals from Ali Al Salem was raised at a meeting of the Defence Council, and the new Secretary of State asked for further advice on the operational

and personnel implications. In November, he was informed that a reduction in the GR1 detachment from twelve to eight aircraft would permit the withdrawal of six aircrew and 31 other personnel from theatre. This would help to alleviate over-stretch among frontline aircrew and allow them to spend 25 per cent less time at Ali Al Salem. It would also have a corresponding training benefit. At the time, GR1 crews were achieving only around 90 per cent of their designated peacetime annual flying training requirement. The proposed reduction in Kuwait would not significantly increase this percentage (not least because, at any one time, as many as 45 GR1s might be undergoing the mid-life upgrade) but it would enhance both the quality and quantity of training opportunities for aircrew, which were expected to include training with TIALD and participation in a major series of exercises in North America in 2000.

In addition, the reduction in aircraft would result in a corresponding decrease in the number of spares required in theatre, allowing them to be redistributed to alleviate shortages elsewhere. Again, it was stressed that these benefits outweighed any slight operational disadvantages that might be incurred by withdrawing the aircraft.

The Secretary of State accepted these arguments in principle, and his US counterpart, William Cohen, likewise signified that he was content with the proposed withdrawal. The only outstanding issue concerned its timing. With negotiations on a new SCR continuing at the UN, Cohen was anxious not to do anything that might be interpreted in Moscow, Beijing or Baghdad as a sign of weakness or lack of resolve. The MOD had recommended a firm decision on the drawdown by 2 December to allow the three aircraft (and one of the two Bahrain VC10s) to be brought home by Christmas, but Cohen was unhappy with this schedule and sought a delay, pending the outcome of the deliberations at the UN. The MOD subsequently advised the Secretary of State that a decision might be deferred to 9 December; in the interim, efforts could be made to win over Cohen. However, the Cabinet proved reluctant to risk jeopardising relations with Washington.

On 17 December, the UN passed a new SCR (numbered 1284), creating a Monitoring, Verification and Inspections Commission (UNMOVIC) to replace UNSCOM. The government then finally approved the repatriation of four GR1s, and they returned to the UK on 25 January 2000, leaving behind a balanced fleet of four VICON-capable and four TIALD-capable aircraft. Six months had passed since the first submission to DCDS(C) requesting

the withdrawal of two GR1s. For much of the intervening period, issues such as aircrew training and fleet management had been subordinated to broader strategic and diplomatic considerations.

Conclusion

At first, the basic aim of coalition military operations in the Gulf in the period covered by this study was to coerce Iraq into co-operating with UN resolutions on her disarmament. In the opening phase of the UNSCOM crisis, from November 1997 to February 1998, this approach was apparently successful. Confronted by the threat of force, Saddam Hussein seemed to back down. Theoretically, at any rate, the Annan-Aziz MOU provided a basis on which UNSCOM could once again function effectively. Yet the reality was very different. In fact, the MOU merely represented another chapter in the drawn-out story of Iraq's 'obstructive co-operation'. Further efforts at coercion achieved one last bout of false optimism in November 1998 before the strategy collapsed completely in the following month.

It seems more than possible, however, that the US government had given up on UNSCOM by December 1998. Modern-day crisis management is too complex for it to be driven by local disputes of the sort that continuously erupted between the Commission and the Iraqi authorities. A limited campaign of air strikes against Iraq might end her co-operation with UNSCOM altogether but promised to further the objective of disarmament by directly targeting facilities that intelligence had linked to WMD-related activity. The subsequent strategy of containment, despite its disadvantages, probably appeared easier to direct than an UNSCOM-based approach and less likely to perpetuate the cycle of confrontation, with all its consequences in terms of force deployments, withdrawals, adjustments and redeployments, tense deliberations in the UN Security Council and intricate media management.

The concept of coercion was based on predictions of the effect that the threat of limited air strikes would exert on Saddam Hussein when combined with strong diplomatic pressure; coalition strategy was in this respect 'effects-based'. The effects were largely calculated at the political rather than the military level, primarily in Washington rather than London. However, the subsequent concept of using such air strikes to degrade Iraq's suspected WMD capability necessarily depended more on detailed military advice. Both strategies

were strongly influenced by perceptions of air power based on the experience of the Gulf War of 1991, when the revolutionary potential of modern innovations like precision-guided bombs, cruise missiles and stealth aircraft first became clear. The Clinton administration was also strongly opposed to the use of ground troops in any renewed hostilities with Iraq, fearing the casualties that would inevitably be sustained. The RAF was the instrument that the British government chose to employ in pursuit of the coalition's strategic objectives but was in no way responsible for the formulation of strategy.

The UK's initial response to the beginning of the UNSCOM crisis in November 1997 merely involved strengthening the GR1 force already in theatre. But Saudi Arabia's refusal to allow offensive air operations to be launched from her soil led to a search for alternatives. The decision to prepare HMS *Invincible* for a deployment to the Gulf with Harrier GR7s reflected concerns that hostilities might break out there before a land base outside Saudi Arabia had been secured; the MOD's favoured deployment option was always to send a detachment of Tornado GR1s either to Bahrain or Kuwait. By December 1997 a new land base, Ali Al Salem in Kuwait, had been identified, but the Foreign Office objected when the MOD proposed withdrawing *Invincible* from the Mediterranean and maintaining a detachment of GR1s at reduced NTM for deployment to Ali Al Salem. *Invincible*'s presence in the Mediterranean fulfilled the UK's diplomatic need to demonstrate her resolve to both Iraq and the USA but could not be construed as inflammatory, whereas the dispatch of a second GR1 detachment might be interpreted as a precursor to imminent hostilities. *Invincible* and the GR7 crews of 1 Squadron had consequently to wait for another six weeks until renewed deadlock in Iraq and further pressure from the MOD finally resulted in their transit through the Suez Canal.

Soon after the GR7s' arrival they were joined by the GR1s at Ali Al Salem. This inevitably left some GR7 crews with the impression that their months at sea had been unnecessary, and the advantages of land-based aircraft deployments over carrier deployments were certainly demonstrated very clearly in this period. Given the availability of host-nation support (which has rarely been withheld from the UK in modern military history), a detachment of land-based aircraft could deploy into theatre much faster than an aircraft carrier. Hence the lead-time for deploying carriers must be significantly longer than for land-based aircraft, and ministers will always be compelled to take key deployment decisions earlier. Moreover, although *Invincible* did provide a valuable offshore platform for the GR7s

and FA2s in the Gulf, aircraft carriers barely reduced coalition requirements for air bases in the region. Neither aircraft could have operated without the support of airborne command and control, escort, SEAD and EW aircraft that were predominantly land-based, or without AAR from land-based tankers (US Navy aircraft were also critically dependent on land-based tankers, including the RAF VC10s). Had they been called into action, much of their targeting and threat-warning information would have come from intelligence collected by land-based intelligence, surveillance, target acquisition and reconnaissance (ISTAR) aircraft. Invincible herself required port facilities in theatre for essential repairs; their absence would have rendered her non-operational and she would have been compelled to withdraw.

Nevertheless, the MOD subsequently concluded that ‘the ability of the CAG to “poise” in the Eastern Mediterranean was valuable in political and military terms.’ It gave the British government the capacity to increase pressure on Saddam Hussein in stages, first by stationing Invincible in the Mediterranean, then by sending her through the Suez Canal to the Gulf, and then by dispatching the GR1s. Furthermore the deployment helped to accelerate the GR7 TIALD equipment programme so improving its military utility, and produced many valuable lessons about carrier-borne operations. The FA2’s obsolescence and the limitations of the Harriers’ engines in warm climates were very clearly exposed and it emerged that Invincible lacked critical capabilities for supporting air operations, such as adequate communications and night landing provisions. Finally the experience demonstrated that the issue of onboard aircrew training during prolonged periods of ‘poise’ required extremely careful examination. Clearly, it is pointless to maintain aircrew onboard ship for several months prior to an operation if, in consequence, there is a diminution of the skills they will need when they reach their ultimate destination.

After the initial crisis was defused by the Annan-Aziz MOU in February 1998, Invincible’s replacement, HMS *Illustrious*, was withdrawn from the Gulf, but the Ali Al Salem detachment was strengthened to demonstrate the UK’s continuing commitment to UNSCOM and the goal of Iraqi disarmament. Eventually, the PSAB reconnaissance operation was relocated to Ali Al Salem, which thus became the UK’s primary operational base in the region. After withdrawing from the very brink of hostilities in November 1998, the detachment was finally committed to live action in Operation Desert Fox in December. Over three days they dropped 48 Paveway II bombs, 25 (52 per cent) of which either destroyed or damaged their targets, and four Paveway III bombs, three on target. The overall accuracy of Paveway II missions

was slightly below expectations largely because of the unsuccessful experiment in 'double dimping'. Otherwise, only a few misses resulted directly from failures in the operation or functional performance of the TIALD/Paveway combination.

The February crisis, Desert Fox and the LGB aiming problems that preceded it drew attention to the RAF's shortage of TIALD pods and the inadequacy of TIALD training. The OC 14 Squadron grasped the very essence of the problem at the end of October 1998 when he wrote:

Our *raison d'être* in an operational and, ever increasing, media arena is to practise daily our capability to strike, as and when the government consider it necessary to support the political process. In order to fulfil the government's expectations of 100% hits and no civilian casualties, it is more important than ever before that we ensure adequate support and training is available to realise the political objectives. It is, therefore, imperative that regular operational end-to-end checks are required of Sqns in theatre and that regular training opportunities are made available to enable Sqns to train realistically in their primary role.

The lessons-identified process following Desert Fox produced a requirement for an extra 24 TIALD pods, and the RAF established a steering group under the auspices of DAO to implement several enhancements to TIALD and improve standardisation between variants of the pod. Additionally, HQ 1 Group was tasked to review their annual training syllabi and work with the AWC towards the development of a training strategy for Paveway II and III. This resulted in the allocation of 333 Paveway II bombs per year for training, the development of Aberporth as an air-to ground weapons range for LGBs, and clearance to drop inert LGBs at Goose Bay in Canada.

Operation Desert Fox did not persuade Saddam Hussein to resume co-operation with UNSCOM but it did accurately target Iraq's weapons production capability together with its air defence system and other key military facilities. It was followed by a sharp increase in NFZ violations by the Iraqi air force and repeated Iraqi SAM threats against coalition aircraft; the coalition responded by attacking Iraqi ground targets. This so-called 'tit-for-tat cycle' continued for the remainder of Operation Southern Watch. If it was sometimes problematic

from a political perspective, it had nevertheless to be accepted as an unavoidable consequence of the post-UNSCOM strategy of containment. To moderate any adverse diplomatic repercussions, the US and the UK could only seek to lower the profile of these operations. In this respect, they were probably assisted by the Kosovo crisis in the spring, which diverted the international community's attention away from Iraq.

In February 1999 the PSAB GR1s were replaced by Tornado F3s. Saudi operating restrictions had greatly reduced the ability of the GR1s to contribute effectively to coalition operations, but the government believed it was essential to maintain an aircraft detachment at PSAB to demonstrate the UK's support for Saudi Arabia. The past serviceability record of the F3 made necessary the location of six aircraft at PSAB to enable a two-aircraft CAP to be flown daily. Finally, in January 2000, the GR1 detachment at Ali Al Salem was reduced from twelve to eight aircraft – a number considered adequate for routine Southern Watch tasking. Hence, by February 2000, the RAF had assumed a posture in the Gulf that would be maintained until the destruction of Saddam Hussein's regime in 2003.

Taken as a whole, Operation Bolton illustrates with exceptional clarity the very complex and challenging political and diplomatic environment within which military campaigns must be conducted. In the development of policy, the British government had always to consider the position of the United States, the role of the United Nations Security Council (especially the permanent five members of the Council), the requirements of international law, the need to maintain pressure on Iraq, and the importance of not alienating other Gulf states, as well as the more obvious political factors like domestic public opinion. In truth, at the strategic level, this left very little room for manoeuvre. It was therefore perhaps inevitable that matters of more specific importance to RAF commanders – fleet management, aircrew currency, training, manning levels and the like – which also arose throughout Bolton, should have ranked very low on the government's list of priorities. Most of all, while the RAF was confronted by the problem of overstretch in a variety of ways in the late 1990s, it was only one factor among many that ranked for consideration at the strategic level and it was by no means considered the most important. On balance, although deployment decisions were never taken lightly, the prevailing strategic environment during Operation Bolton seems to have facilitated the dispatch of additional forces into the Gulf and complicated the task of their withdrawal. The protracted haggling over force reductions in the summer of 1998 and throughout 1999 underlines this essential truth.

As we have seen, Southern Watch in general – and Operation Bolton in particular – also helped to solder the RAF into an extremely close working relationship with the Americans, a tendency reinforced by their collaboration over Northern Iraq. This was not in any sense the RAF's choice; rather, it resulted from the way UK air power was employed in support of government policy. From a British perspective, at any rate, Bolton was a single-service coalition operation. In most respects, relations with the US were very harmonious and effective. They briefly threatened to break down in November 1998 due to actions taken at the political level, but there was no lasting damage. Nevertheless, while the RAF's incorporation into a coalition air operation proved relatively straightforward, it did not provide a basis for establishing or maintaining proficiency in operations involving a significant land component. Air-land integration would therefore present considerable problems when, from 2003 onwards, ground forces were assigned a more prominent role in the Iraqi theatre.

Operation Bolton must be judged a success for the RAF despite the many difficulties involved. The various detachments achieved all that was required of them, deploying rapidly and efficiently and sustaining the required level of flying over time, as well as contributing effectively to coalition actions against Iraq without incurring any casualties. In the process they displayed a high degree of resourcefulness, initiative and flexibility. Air operations over southern Iraq between 1997 and 2000 did not achieve their declared objective of restoring Iraqi co-operation with UNSCOM; however, by the time hostilities broke out, coalition strategists were privately acknowledging that this was an unrealistically ambitious goal. There was good reason to believe that Saddam Hussein's WMD capability was significantly set back in December 1998, and the limited application of air power in Operation Desert Fox fulfilled the immediate aims of the coalition to that extent. Nevertheless, in the absence of any renewed Iraqi co-operation with UN weapons inspectors, a longer-term solution would depend on the commitment of military force on a much larger scale.

PART 2

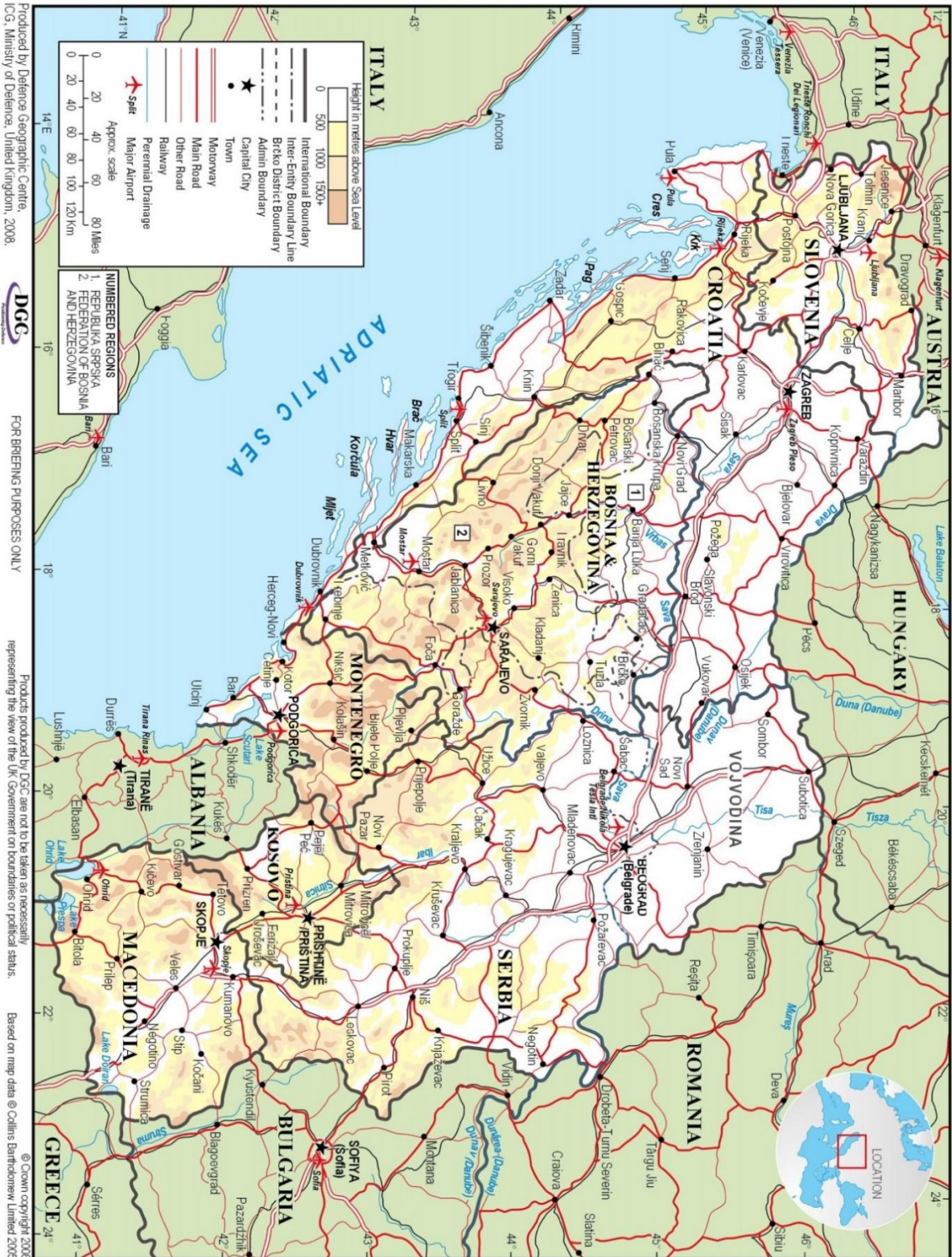
THE ROYAL AIR FORCE IN OPERATION ALLIED FORCE KOSOVO, 1999

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WORLD BRIEFING MAPS

FORMER YUGOSLAVIA



Introduction

On 24 March 1999, NATO launched an air operation entitled Allied Force against the Federal Republic of Yugoslavia (FRY) in response to the actions of the FRY security forces in the southern Serbian province of Kosovo. It was the first live military action to be conducted entirely under NATO auspices since the creation of the alliance in 1949. Two and a half months later, on 10 June, the campaign was suspended after the FRY's president, Slobodan Milosevic, agreed to withdraw his troops from Kosovo and satisfy a range of other requirements laid down by the international community for ending the conflict. By that time, many Kosovo Albanians had been subjected to appalling human rights violations in a process similar to the 'ethnic cleansing' previously witnessed in Bosnia, and hundreds of thousands had fled to refugee camps in Albania and Macedonia to escape the Yugoslav army, military police and paramilitaries. In their absence, their homes were often looted and destroyed.

In the same period, NATO bombing inflicted extensive damage on the FRY's military and economic infrastructure. Military installations, command and control facilities, fuel storage centres and power-generation plants were demolished; communications links were severed; the FRY's air force lost one quarter of its military aircraft and one third of the most advanced aircraft in its inventory; the ground forces in Kosovo were subjected to relentless harassment and their combat capability was significantly reduced. To achieve this, NATO aircraft flew some 38,004 sorties, of which 10,484 were offensive sorties. The UK contributed 1,618 sorties to NATO's total, 1,008 of which were offensive sorties (more data on RAF participation is at Annex H). Between 24 March and Allied Force's suspension on 10 June, NATO aircraft released 23,614 air munitions against FRY targets. In the course of the operation, the number of committed NATO aircraft almost doubled. The offensive sortie rate increased from between 50 and 100 per day in the first week of the campaign to an average of more than 280 per day in the week preceding the start of peace negotiations in June.

This study surveys western strategy during the Kosovo conflict, the UK's part in its formulation and the RAF's contribution to the bombing campaign. In tracing the origins of the crisis, it considers not only the diplomatic and military events preceding hostilities but also the legal justification for Operation Allied Force, the rationale for mounting an air campaign in preference to other forms of military intervention, and British expectations of its

achievement. The subsequent analysis of air campaign strategy examines the failure of NATO's initial plans, the FRY's response to Allied Force, the enlargement of NATO's military effort and the debate within the alliance on how air power could best be employed to achieve the desired strategic effect.

This debate was shaped by straightforward assessments of practical military capabilities and a variety of more complex military and political factors, such as the alliance's composition and decision-making processes and such sensitive issues as combatant and non-combatant casualties and collateral damage. Extraneous factors, particularly the weather, also exerted a pronounced impact on operations. The interaction of these influences served to reduce NATO's freedom of action over Kosovo and prevented air power from realising its true potential until the final weeks of the operation.

Among the leading participants in Operation Allied Force, the UK gave particularly serious consideration to the implications of air power's initial failure to achieve NATO's objectives. For this reason, the British became the foremost proponents of an alternative strategy, which envisaged planning and preparing for an opposed land campaign in Kosovo. Efforts to convince other members of NATO that a ground offensive was necessary engendered a second protracted debate within the alliance. It is important to consider this aspect of NATO's strategic planning in detail, for it has been widely argued that the threat of a ground offensive played a decisive role in persuading the FRY to accept the international community's demands in June 1999. It is thus implicitly assumed that the UK successfully converted the principal NATO powers, notably the United States, to a land-based strategy. Yet a very different view of the debate on ground options for Kosovo is presented here, for there proved to be little documentary evidence that the UK secured the agreement of the other powers to a ground strategy that went beyond peace enforcement. Indeed, only a few days before Milosevic's capitulation, key NATO members were still resolute in their opposition to British arguments.

Inevitably, these findings pose one further question. If the air campaign was less effective than expected and if the FRY was not confronted by the prospect of a NATO ground campaign, why did her government finally decide to capitulate? The third factor that helped to determine the outcome of the Kosovo crisis was diplomacy. In describing the western diplomatic initiatives that finally brought the war to an end, this account focuses particularly

on Russia's role as the FRY's only European ally and the efforts of the western powers to align Russia more closely with their position and so increase the diplomatic pressure on Milosevic. It does not prove that Milosevic finally surrendered because of these diplomatic efforts. Indeed, the diplomatic proceedings described here were exceptionally convoluted and explain little about his motives except that he probably hoped to obtain better terms than he actually received. Yet it is clear that military force and diplomacy complemented one another during the conflict. Their combination played a vital role in bringing victory to NATO.

When the Kosovo conflict began, a significant number of RAF combat aircraft were engaged in other overseas operations. Detachments of 12 Tornado GR1s and six Tornado F3s were deployed in Kuwait and Saudi Arabia, while four Jaguars were based in Turkey and were helping to patrol the No-Fly Zone over northern Iraq. Commitments and resources had thus to be carefully weighed in determining the size of the UK's contribution to Allied Force. The British offensive effort at first comprised eight Harrier GR7s based at Gioia del Colle in Italy. When NATO air operations failed to achieve their initial objectives, the Harrier detachment was augmented by a further four aircraft, and eight Tornado GR1s based at RAF Bruggen were committed to the campaign.

Between them, the Harriers and Tornados flew around 1,000 operational sorties. The Harriers accounted for about 85 per cent of this total, being the larger force numerically and operating closer to the theatre of operations. They flew predominantly against tactical and static military targets in Kosovo, while the Tornados were entirely committed to attacks on fixed targets, such as military and transportation infrastructure, and flew a higher proportion of their missions over Serbia. Exceptional challenges confronted both detachments. The story of UK combat air power in the Kosovo conflict provides an illuminating insight into the relationship between the strategic and operational direction of an air campaign and the harsh realities of tactical-level execution.

At the same time, it is important to bear in mind that the air campaign involved not only bombers but complex air 'packages' that consisted of ISTAR, AAR, SEAD and fighter escort elements, operating within very restricted airspace. Supporting air activity also included theatre airlift and personnel recovery. Effective tactical air command and control was of paramount importance, and RAF E-3Ds executed a significant proportion of the airborne C2 task. Their vital contribution is also surveyed within these pages.

Background and Origins

The long-term origins of the Kosovo conflict may be identified in many centuries of Balkan history and lie far beyond the scope of this study. Even the more recent causes of the crisis are difficult to portray accurately in any very concise form. There are also dangers involved in generalising about the role of any one ethnic group in the turbulence that has for so long characterised the southern Slav region. Hence, it must always be remembered that the Serbs, who were frequently vilified as the perpetrators of mass murder and brutal ethnic cleansing activities during the 1990s, have in the past been the victims of dreadful atrocities themselves.

In a purely immediate sense, the Kosovo crisis emerged out of the disintegration of the post-war Federal Republic of Yugoslavia during the early 1990s. In 1991, war erupted between Serbia and Slovenia and, particularly, Serbia and Croatia, and resulted in the secession of both Slovenia and Croatia from Yugoslavia. The Croatian conflict first led to the intervention of the international community in the region through the medium of the UN and its peacekeeping force, UNPROFOR, which was deployed into Serb-held areas of the republic in 1992. International involvement in peacekeeping and humanitarian relief activities then increased after the withdrawal of Macedonia and Bosnia-Herzegovina from Yugoslavia in the winter of 1991-92 and the outbreak of civil war in Bosnia thereafter. UNPROFOR was enlarged and NATO air forces were committed to policing a no-fly zone over Bosnia in Operation Deny Flight. Nevertheless, by the summer of 1995 the international community had reached the conclusion that peacekeeping operations alone could not protect Bosnia's Muslim population from the Bosnian Serb army and paramilitaries. On 30 August, US, British, Spanish and French aircraft launched Operation Deliberate Force, a campaign of air strikes against Serb military targets in south-eastern Bosnia (data on RAF participation is at Annex G). Deliberate Force was followed by the Dayton Peace Accords and the end of the Bosnian conflict, but the post-war settlement left the western powers nervously monitoring what remained of Yugoslavia in the expectation of further instability. Kosovo was the chief focus of their attention.

In 1389, a largely Serbian army fought the Ottoman Turks in the battle of Kosovo Polje (the Field of the Blackbirds). Kosovo subsequently occupied a special place in Serbian history, culture and thinking; for many Serbs it is the very cradle of their nation. However, the region

had been settled by a predominantly Albanian population by the late twentieth century, leaving the Serbs in a small minority. This was formally acknowledged by the 1974 Yugoslav constitution, which granted Kosovo a high degree of autonomy within Serbia, including direct representation in Yugoslav federal institutions. Thereafter, the Kosovo Albanians came to dominate local government and services, leaving the Serb minority feeling increasingly isolated and vulnerable. They were unquestionably victimised by members of the Albanian community, and their graphic accounts of persecution and discrimination attracted widespread publicity elsewhere in Serbia, where there was considerable support for their plight.

Slobodan Milosevic exploited their frustration on his accession to power in Serbia in 1989 on a nationalist agenda, which included re-asserting Serbian control of Kosovo. From 1989 onwards, he removed Kosovo's autonomy and imposed direct rule from Belgrade. His policies resulted in the dissolution of the Kosovo provincial assembly and government and the removal of Kosovo Albanians from important state positions. Under emergency legislation, the FRY's security forces imposed direct rule in an increasingly repressive manner. Education and welfare provisions for the ethnic Albanian population suffered through chronic under-funding.

Kosovo raised an acute dilemma for the international community. There were limited efforts to encourage dialogue between Milosevic and the Kosovo Albanians with the aim of reaching a negotiated settlement, but international action focused on other regions of the Former Yugoslavia during the first half of the 1990s, such as Croatia and Bosnia, where inter-ethnic conflict presented more immediate problems. During the Bosnian crisis, the potential for civil war in Kosovo became clear, and the province's status was regularly discussed by diplomats and statesmen during the protracted negotiations that preceded Operation Deliberate Force and the Dayton Accords. Yet the Dayton settlement did not address the Kosovo problem. The international community considered that Serbia's territorial integrity should be respected, and there was, in any case, some reluctance to antagonise Milosevic, who played a vital role in brokering the deal. The desire not to jeopardise an agreement over Bosnia by attempting to include Kosovo within its terms is easy to understand.

Milosevic himself remained obdurately opposed to anything more than the most limited and ineffective dialogue on Kosovo and tried to reduce international involvement there. In 1993, he refused to extend the mandate of the monitoring mission in the province run by the Conference on Security and Co-operation in Europe (CSCE, later OSCE – the Organisation for Security and Co-operation in Europe), and he also rejected an offer to establish a European Community Monitoring Mission in its place. By the end of 1997, the UN, NATO, the European Union (EU), the OSCE and the Contact Group (comprising the foreign ministers of France, Germany, Italy, Russia, the UK and the US) were closely monitoring the situation in Kosovo. A statement by NATO foreign ministers in December specifically addressed the escalating tensions there and confirmed that the alliance's interest in Balkan stability extended beyond Bosnia to the surrounding region.

At first, after Belgrade rescinded their regional autonomy, the Kosovo Albanians pursued a policy of pragmatic non-violent resistance. Under the leadership of Ibrahim Rugova, who was elected 'President of Kosovo' in unofficial elections in 1992, they established a shadow government and appealed for funds from former members of their community living outside the province to finance welfare and education programmes. However, in the absence of any substantial concessions from Milosevic, a more radical organisation emerged known as the Kosovo Liberation Army (KLA), which resorted to armed resistance to achieve its objectives. The KLA was founded in total secrecy in 1993. Initially, it was little more than an extremist splinter group with a limited capability to undertake sporadic acts of terrorism, but the Dayton settlement created widespread disappointment in Kosovo, undermining the stance of moderates like Rugova and suggesting to many members of the Albanian community that their objectives could only be achieved by force. Moreover, Western military intervention in Bosnia may have encouraged the expectation of some similar diplomatic or military initiative over Kosovo, if a sufficient level of disorder was generated there.

From 1996, the KLA's membership expanded rapidly, and it became far more active. Large quantities of weapons became freely available in neighbouring Albania after the widespread looting of armouries that followed the collapse of the Albanian government in March 1997, and the movement found abundant local sympathy for its aims in the mountainous border regions. It also managed to draw in funds from Kosovo Albanians living abroad and from criminal activities. Escalating KLA attacks on the FRY security forces provoked ever more forceful responses in which little distinction was drawn between the guerrillas and the

general Kosovo Albanian population. The increasingly systematic employment of violent and repressive measures against the civilian community culminated in the death of some 30 Kosovo Albanians at the hands of the security forces after open conflict erupted in the Drenica region in February 1998.

Inevitably, such incidents served to increase the likelihood of some form of international intervention in Kosovo. After the Drenica killings, NATO issued a statement expressing profound concern over the violence in the province and condemning both the forceful repression of non-violent political expression and terrorist acts designed to achieve political goals. The UN, the Contact Group and the EU took similar positions. These organisations all accepted Belgrade's right to respond to KLA acts of terrorism but insisted that such countermeasures should entail only appropriate and proportionate action. Neither of these terms could possibly have been applied to the indiscriminate use of tanks and heavy artillery in operations ostensibly directed against a small minority of the Kosovo Albanian population. At the same time, the international community attempted to put pressure on the KLA.

Yet efforts to achieve a coherent international response to the deepening crisis were hampered by two particular factors. First, there were pronounced differences of perspective between the western nations and Russia. Russia's close historical and cultural ties to Serbia (and obvious parallels between the situation in Kosovo and Chechnya) caused her to be more sympathetic towards Milosevic than most other countries. Early indications of her stance included opposition to British proposals for a selective visa ban or moratorium on export credit finance for the FRY on 9 March 1998, and efforts to obstruct the preparation of a statement on the crisis by the Contact Group on the 25th. On 31 March, UNSCR 1160 called for a political solution to the crisis and imposed an arms embargo on the FRY, but the SCR only prohibited arming and training for terrorist activities in the FRY and Kosovo at Russia's insistence. In Russia, therefore, Milosevic possessed a powerful diplomatic ally, if not a military one. Second, the KLA proved particularly difficult to deal with. For much of the crisis, it was a disparate movement with no clear structure or hierarchy. Only when its political leadership was established under Hashim Thaqi in the early months of 1999 was it possible for the international community to forge more effective diplomatic links with the organisation.

Throughout 1998, the Contact Group led diplomatic efforts to resolve the crisis and an American envoy, Chris Hill, conducted intensive shuttle diplomacy between the two sides, but Milosevic rebuffed these initiatives. As the level of violence increased, western leaders inevitably began to fear that they were facing a second Bosnia and that the Kosovo Albanians would shortly be exposed to the same horrific process of ethnic cleansing that had accompanied earlier conflicts in the former Yugoslavia. This, in turn, threatened to jeopardise peace throughout the Balkans and the stability of NATO's south-eastern region. As the US Secretary of Defence put it:

There was no natural boundary to this violence, which previously had moved from Slovenia to Croatia to Bosnia and then to Kosovo. Continued fighting in Kosovo threatened to (a) scuttle the successful Dayton peace process in Bosnia; (b) re-ignite chaos in Albania; (c) destabilise the former Yugoslav Republic of Macedonia, with its large Albanian minority; and (d) spill over into other neighbouring countries, including Bulgaria and Greece. Instability in this region had the potential to exacerbate rivalries between Greece and Turkey, two NATO allies with significant and often distinct interests in Southern Europe.

In Bosnia, all negotiation with the Serbs proved fruitless and a settlement was only reached after the launch of military action. Anticipating similar intransigence over Kosovo, the western states therefore began to examine military options as part of the wider effort by the international community to find a solution. In June, NATO defence ministers – meeting as the North Atlantic Council (NAC) – tasked their military planners to produce a range of options, both ground and air, for military support to the diplomatic process. During the summer, NATO forces undertook a series of air and ground exercises to demonstrate their ability to intervene rapidly in the region. These included Exercise Determined Falcon, which was mounted over Albania and Macedonia and involved more than 80 aircraft.

However, military intervention in Kosovo was far more problematic from a legal perspective than in Bosnia. Whereas Bosnia was recognised as an independent state by the UN in 1992, Kosovo lay within the sovereign territory of Serbia, and neither the UN nor the western powers had any desire to see the province achieve independence. Furthermore, while the UN had involved itself at an early stage in the Bosnian crisis, and NATO had ultimately taken military action in Bosnia on the UN's behalf under so-called 'dual key' procedures, no such

arrangement existed for Kosovo in 1998. UNSCR 1160 was followed on 23 September by UNSCR 1199, which demanded a ceasefire, the withdrawal of FRY military units involved in acts of repression against Kosovo's civilian population and the start of meaningful dialogue; but it was certain that Russia would block any UNSCR sanctioning the use of military force against the FRY in the event of non-compliance.

Otherwise, under international law as it was generally interpreted in 1998, only self-defence, anticipatory self-defence or other actions under Chapter 7 of the UN Charter permitted a country or an alliance of countries to violate the territorial sovereignty of another. None of these criteria could reasonably have been applied to NATO military action in, or above, the FRY. So the NATO governments fell back on what they perceived to be the only applicable legal justification for military intervention, namely, that it was an exceptional measure representing the minimum necessary to avert a humanitarian catastrophe. Such action was said to be legally justifiable in support of purposes laid down by the UN Security Council even without the Council's express authorisation. These purposes were clearly defined in UNSCR 1199.

The significance of the term 'humanitarian catastrophe' should not be underestimated. Clearly, a serious humanitarian crisis was developing in Kosovo during 1998. A report by the UN Secretary General in September stated:

Fighting has forced more than 200,000 people to flee their homes. The situation is made worse by large-scale destruction of houses, food shortages and the risk of epidemic. The threat of humanitarian catastrophe is becoming ever more real. According to the Office of the United Nations High Commissioner for Refugees (UNHCR), large numbers of displaced persons, as many as 50,000, are today living out in the open in Kosovo. Many others are living in desperate conditions as entire villages have been destroyed, livestock slaughtered and fields burned.

Nevertheless, the crisis became a catastrophe primarily to legitimise NATO's threat of military intervention. The term 'humanitarian catastrophe' was entirely absent from UNSCR 1160 in March 1998 but appeared twice in the first two paragraphs of UNSCR 1199 in September, when hostilities were thought to be imminent; subsequently it featured

repeatedly in public pronouncements on the Kosovo crisis by many NATO members. Given the UN Security Council's acceptance that there was an 'impending humanitarian catastrophe', and assuming that every means short of force had been employed to avert it, NATO governments could claim that there was a basis for military action under international law if such action could be deemed an 'exceptional measure'. On 2 October, the UK Attorney General confirmed to the Cabinet that it could, and a similar conclusion appears to have been drawn by his NATO counterparts. In truth, the legal basis for armed intervention in Kosovo was far from clear-cut in 1998, but there was a growing acceptance that the threat of a humanitarian disaster might legitimise military action against a sovereign state in certain circumstances. The UN Secretary General himself had few doubts over the legality of military intervention. He felt

That the scale of the atrocities in Kosovo meant there were parallels with other cross-border military interventions conducted without UN cover, such as the Indians in Bangladesh, the Vietnamese in Cambodia and the Tanzanians in Uganda.

In the aftermath of the Kosovo conflict, British military doctrine was amended to acknowledge that 'The international community appears to have accepted the principle of humanitarian intervention in another state's affairs in breach of its territorial integrity and sovereignty where extreme humanitarian need exists.'

NATO's Response

The various military options were considered against a background of escalating violence in Kosovo as the KLA moved from isolated hit-and-run attacks to the occupation of 'liberated' territory, and the FRY security forces mounted large-scale operations against them. They continued to employ tactics that, if not indiscriminate, were extremely heavy-handed, fighting from a distance and using machine guns, mortars, tanks and artillery against positions they believed the KLA occupied. As many of these were in Kosovo Albanian villages, civilians repeatedly found themselves in the firing line. Between 23 August and 5 September, major offensives in Suva Reka, Lipjan, Stimlje, Malisevo, Glogovac and Prizren resulted in Kosovo Albanian civilian casualties and were accompanied by looting and the destruction of

property, livestock and crops. The number of civilians abandoning their homes to escape the fighting and its repercussions continued to increase.

The first response of NATO's Military Committee (MC) to the NAC's request for an assessment of military options surveyed a range of ground operations, including the implementation of a ceasefire or peace agreement and – at the top end of the spectrum – an operation to enter Kosovo against opposition in order to impose a solution. This latter proposition appears to have been rejected out of hand almost immediately, for the next paper on prospective ground options, a Concept of Operations, confined itself to considering measures for monitoring and enforcing a ceasefire agreement. The NAC approved this document on 12 August. Ground forces would not be deployed in Kosovo without a ceasefire or in the face of overt opposition from the FRY.

At the same time, two main independent air options were considered. The so-called 'limited air option' was largely to be conducted with cruise missiles, while the 'phased air operation' envisaged a step-by-step expansion of the scope and intensity of an air campaign against the FRY. Basic Concepts of Operation for both plans were approved in August, and the NAC sanctioned ROE and, provisionally, a contingency operational plan for the phased operation between 1 and 6 September. A formal plan for the phased operation (OPLAN 10601 – Allied Force) was approved by the NAC just over a month later, on 8 October. In the UK, the DOP agreed in principle on 5 October to contribute to air operations against military targets in the FRY and to prepare force contributions to a subsequent NATO ground deployment provided that the US was involved. Four Harrier GR7s were already in theatre, contributing to Operation Deliberate Forge – the continuing international operation to maintain the Dayton peace settlement in Bosnia-Herzegovina – but the government now decided to deploy four additional aircraft, which had been held at readiness.

Why was an independent air campaign favoured over a joint air and ground operation? Time was one important factor. The situation in Kosovo was deteriorating rapidly while these early plans were under consideration, and it doubtless seemed possible that military measures might have to be initiated at very short notice. The deployment of a ground force of sufficient size to mount an opposed entry into Kosovo would have taken months. Air power was, by contrast, already available in Italy for operations over Bosnia and could rapidly be

augmented from elsewhere in Europe. Hence a force capable of executing the phased air operation could be assembled quickly.

However, far more significant was the likelihood that a ground campaign would be protracted in duration and expensive in casualties. In the aftermath of Afghanistan and Iraq, the level of casualty aversion that prevailed in the late 1990s is easily forgotten. Within the United States, inevitably the key player, there existed an acute sensitivity over the losses suffered in Vietnam, Beirut and Mogadishu, but America was by no means the only nation preoccupied with this issue. As CAS told CDS:

Casualties suffered in the pursuit of obscure political goals ... especially if those purposes lie beyond the realms of the relatively quick fix, will appear to American and most western societies as nothing short of criminal. The sensitivity to body bags and associated low tolerance of casualties has, in my view, become a new determining factor in the development of strategy and tactics.

Even the UK – later the strongest advocate of a ground operation – was not prepared to consider an opposed intervention by land forces in the autumn of 1998.

But a ground campaign (and the casualties involved) appeared unnecessary when an air operation seemed capable of securing western objectives independently. The formidable capacity of modern high-technology military equipment, including cruise missiles, stealth aircraft and precision-guided bombs, had first been demonstrated by the air campaign against Iraq in 1991, when five weeks of intensive strategic and tactical bombing rendered a ground campaign to liberate Kuwait little more than a formality. At a mercifully low cost in casualties, the US-led coalition secured its objectives in just four days against an opponent no longer in possession of the will or ability to fight. The case for employing air power was then reinforced by the experience of the Bosnian conflict. The war in Bosnia-Herzegovina was accompanied by several years of tortuous ground activity under UN auspices, ranging from observation through humanitarian relief to peacekeeping. In August 1995, the crisis seemed as far from resolution as ever when the decision was finally taken to launch Operation Deliberate Force. The operation lasted less than two weeks. Accompanied

neither by NATO casualties nor collateral damage, it concluded when Bosnian Serb leaders and their broker, Slobodan Milosevic, agreed to accept the UN's terms for a ceasefire.

It would be easy to conclude that Deliberate Force played a key role in coercing the Bosnian Serbs into accepting the Dayton Peace Accords, which effectively brought the Bosnian crisis to an end. According to one American report,

Air power delivered what it promised in Deliberate Force. It was a decisive element in bringing a new period of peace to Bosnia – quickly, cleanly, and at minimal cost in blood and treasure to the intervening states and, indeed, to the Bosnian Serbs.

And yet air power's historical record as an independent instrument of coercion has been chequered. The experience of conventional bombing in the Second World War suggested that its capacity to undermine a nation's will to fight was exaggerated by early theorists, while the coercive elements of postwar air campaigns in, for example, Korea and Vietnam, enjoyed only partial success. In 1990-91 the possibility that air power might independently achieve the coalition's strategic objective – the liberation of Kuwait – was ruled out at an early stage in the planning process despite spectacular advances in offensive air technology in the intervening years. Nevertheless, the success of the air campaign in the Gulf – especially the new 'smart' capabilities that the campaign revealed – persuaded politicians and some military chiefs that an independent air operation would bring the Bosnian Serbs to the negotiating table. They were not disappointed.

The Gulf War and Operation Deliberate Force revived western confidence in the independent potential of air power, but it is often forgotten that both operations were mounted in very favourable circumstances. Weather conditions were predominantly clear in the Gulf, and the target array, particularly in the open desert, proved especially amenable to air attack. Fine weather also prevailed over Bosnia, and NATO aircraft encountered only moderate and poorly co-ordinated air defence measures there. Aircrew could safely make repeated target runs until satisfied that they had achieved optimum attack profiles before releasing their weapons. In the RAF's case, the relatively low sortie rate could easily be fulfilled by experienced crews, who were fully conversant with the tactics, techniques and procedures associated with the employment of precision-guided munitions. Not surprisingly,

they accomplished some of the most accurate bombing in the service's history, yet it did not necessarily follow that future operations undertaken in less benign environments would achieve similar results.

In any case, the proposition that air power made a decisive difference in Bosnia has not gone unchallenged. Sceptics have suggested that the ground offensives launched by Croatia and Bosnia against Serb-held territory in 1995 played a more important part than the air campaign in forcing a settlement on the Bosnian Serbs. They have also drawn attention to the substantial presence of UN ground forces in Bosnia, and to the intense diplomatic pressure brought to bear on the Bosnian Serb leader, Radovan Karadzic, by the international community. Karadzic was furthermore pressed to reach a settlement by Milosevic himself, who was concerned over the mounting strength of non-Serb military forces in the region and the worsening economic condition of his country, brought on by UN sanctions. Hence, it was certainly not air power alone that ended the Bosnian crisis. In the UK, CAS would only go so far as to claim that 'The precise application of NATO air power made ... the decisive contribution to the *totality of pressures* which forced the Serbs to accept the demands of the international community.'³⁰

Nevertheless, such reservations, expressed by well-informed observers on many occasions between 1995 and 1998, were not sufficient to overcome the fundamental attraction of modern air power to politicians – low casualties, low collateral damage, rapid achievement of strategic objectives. Add to these considerations its apparently proven capacity to resolve a recent inter-ethnic conflict in which Serbia was one of the leading protagonists, and it is easy to understand why the western powers opted for an air campaign in the summer of 1998, as the Kosovo crisis deepened. No alternative was politically acceptable.

The NAC agreed the Activation Order (ACTORD) for operation Allied Force on 13 October 1998; execution was to commence four days later. But the United States special envoy to the FRY, Richard Holbrooke, then reported to NATO that Milosevic had agreed to the deployment of an unarmed verification mission to Kosovo under the auspices of the OSCE and to the establishment of a NATO aerial verification mission. The two missions would monitor and confirm compliance with the requirements of UNSCR 1199. After further negotiations between NATO and the FRY, it was agreed that the number of security force personnel in Kosovo should be reduced to pre-crisis levels – to some 12,000 Yugoslav Army

(VJ) and 10,000 Ministry of Interior Police (MUP) personnel. On 27 October, NATO decided to keep compliance with these agreements (which had been underpinned by UNSCR 1203) under continuous review and to maintain its preparedness to undertake air strikes, should they be required. The ACTORD remained in place on the understanding that Allied Force would not be launched without a further decision by the NAC.

Despite doubts as to whether the Holbrooke Agreement would deliver a lasting settlement, there were genuine hopes that it would work. The UK withdrew four RAF Harriers and one tanker from Italy and, at the same time, provided staff for the OSCE mission and two RAF Canberra PR9 reconnaissance aircraft for the verification mission. British personnel also helped to run the Verification and Coordination Centre in Macedonia, which facilitated liaison between the two operations. In December, NATO agreed to the deployment of a force to Macedonia, the so-called Extraction Force (EF), designed to ensure the security of the OSCE verifiers. This was the first deployment of NATO ground forces to the Kosovo theatre of operations. Throughout this period, Kosovo was the subject of regular dialogue with Russia through the medium of the NATO/Russia Permanent Joint Council.

Although the situation stabilised for a short time, the violence continued on both sides. The Kosovo Verification Mission (KVM) played a useful role in giving the international community a direct monitoring presence in Kosovo, but it was unable, under the terms of its mandate, to prevent the conflict from escalating. Despite VJ and MUP withdrawals, the reduced force levels envisaged in October were never achieved, and many of the personnel withdrawn were gradually re-infiltrated. In late December 1998, FRY security operations were intensified, and the KLA also expanded its activities, rebel fighters moving into territory vacated following Milosevic's partial compliance with the Holbrooke Agreement. Between 24 and 27 December, VJ and MUP forces moved into the Podujevo area, killed at least nine Kosovo Albanians and forced 5,500 people to flee their homes. Heavy fighting also erupted around Decane. A Serbian café in Pristina was targeted in a grenade attack on 6 January, and the KLA kidnapped several VJ personnel on the 8th. The KVM subsequently negotiated their release.

During the course of 15 and 16 January, the bodies of some 45 Kosovo Albanians were found near Racak, and the head of the KVM immediately attributed their deaths to the

actions of the FRY security forces. The International Criminal Tribunal for the former Yugoslavia (ICTY) described the incident as follows:

On or about 15 January, in the early morning hours, the village of Racak was attacked by forces of the FRY and Serbia. After shelling by the VJ units, the Serbian police entered the village later in the morning and began conducting house-to-house searches. Villagers, who attempted to flee from the Serb police, were shot throughout the village. A group of approximately 25 men attempted to hide in a building but were discovered by the Serb police. They were beaten and then removed to a nearby hill, where the policemen shot and killed them. Altogether, the forces of the FRY and Serbia killed approximately 45 Kosovo Albanians in and around Racak.

The atrocity was condemned by the NAC, the UN Security Council and the OSCE. On 19 January, the Supreme Allied Commander Europe (SACEUR) and the chairman of NATO's MC again visited Belgrade to press Milosevic on VJ compliance with the Holbrooke Agreement and access to the Racak site for the ICTY, but they obtained no meaningful concessions. NATO therefore decided to re-deploy the aircraft withdrawn the previous November and increase the readiness of assigned forces so air operations could be executed at 48 hours' notice. The Secretary of State for Defence, George Robertson, announced the return of the four Harrier GR7s and the tanker to Italy, bringing the British total to eight GR7s and two tankers. He also agreed to the concept of operations for the main EF deployment, involving a combined overall force of up to 10,000 held at home bases on seven days' notice to move. The British contribution numbered 2,500 plus a national support element of 1,300. The Secretary of State approved the plan on the basis that these troops could also act as a peace implementation force.

The Racak Massacre and its consequences have been the subject of a substantial volume of speculative and tendentious writing since January 1999, but the innumerable claims and counter-claims are of less significance here than the general consensus that Racak exerted a profound influence on western strategy towards Kosovo. The US State Department saw the massacre as incontrovertible evidence of the Holbrooke Agreement's failure and concluded that it was necessary to adopt a far stronger line with the FRY. Broader international support for such an approach was now expected. The US ambassador to

NATO proposed re-activating the ACTORD for Operation Allied Force and issuing a 96-hour ultimatum to Belgrade, but his British counterpart argued that any military threat to the FRY should be accompanied by a coherent political process – a point reiterated by CDS to Holbrooke during a visit to New York.

The State Department was persuaded to compromise somewhat in deference to the sensitivities of other members of the Contact Group, but the strategy that emerged during the final week of January remained uncompromising by any standards. The FRY and the KLA were to be called to a meeting and presented with a series of minimum terms for the resolution of the conflict. These reiterated 'the commitment of the international community to the sovereignty and territorial integrity of the Federal Republic of Yugoslavia' but nevertheless required an immediate ceasefire, the withdrawal of nearly all Yugoslav security forces from Kosovo, the demilitarisation of the KLA, the insertion of a NATO-led peace-implementation force, KFOR, into the province and effective autonomy for Kosovo within the FRY. A Status of Forces Agreement was also proposed, granting comprehensive rights of transit for NATO peacekeeping forces through the FRY. As these demands were to be underpinned by a clear deadline for agreement, after which force might be employed in the event of non-compliance, they effectively amounted to an ultimatum. Inherent in this strategy was the possibility that military action might have to be initiated, but the State Department believed Milosevic would back down quickly in the event of overt hostilities with NATO. It did not expect a protracted operation to be necessary.

Critics of the State Department's approach have argued that it made war inevitable. According to this view, Milosevic could not possibly have accepted the demand that Yugoslavia should relinquish part of its sovereign territory to a NATO-led force without a UN mandate. And yet, given mounting evidence that the Holbrooke Agreement was being flagrantly violated, some kind of military response by the NATO governments was highly probable by this time. The Racak Massacre and the State Department's reaction to it merely determined that the issue would arise sooner rather than later. Moreover, Milosevic had ignored the previous UNSCRs on Kosovo; there was no evidence at this stage that a UN mandate for international peacekeeping activities there would persuade him to co-operate, and any prospect of action through the UN Security Council was still ruled out by Russia's stance. After a change in the respective positions of both Belgrade and Moscow, a UNSCR

did, in fact, help to resolve the crisis, but that change only occurred after more than two months of NATO military operations against the FRY.

The threat of force that accompanied the State Department's new strategy was duly issued on 28 January, when NATO delivered a 'solemn warning' to Milosevic and the Kosovo Albanian leadership, noting that the alliance was increasing its military preparedness and stood 'ready to act'. It demanded immediate VJ/MUP compliance with the Holbrooke Agreement, a KLA cease-fire and the co-operation of both sides with the KVM and ICTY. Yet the military options available to NATO remained as limited as they had been in the previous summer. In conversation with DSACEUR (Lieutenant General Rupert Smith), CDS reiterated the UK's 'determination to have a political agreement in place prior to committing ourselves to any military action on the ground'. France likewise would not consider a ground deployment without the FRY's consent. Most decisively of all, the United States proved implacably opposed to a ground operation unless both belligerents honoured a negotiated agreement.

On 29 January, the Contact Group met in London and summoned the FRY and Kosovo Albanian leaders to so-called 'proximity talks' at Rambouillet, which were to be chaired by the UK Foreign Secretary and the French foreign minister, Mr Vedrine. On the 30th, the NAC agreed that NATO's Secretary General, Javier Solana, could authorise air strikes against targets on FRY territory; on the following day Solana confirmed that NATO was prepared to take action if no agreement was reached by a deadline set by the Contact Group. Predictably, he emphasised that NATO's intervention might be necessary 'to avert a humanitarian catastrophe' but it was already being suggested in some quarters that air strikes might exacerbate the plight of Kosovo's Albanian population. On 3 February, at the Foreign Secretary's request, an analysis of the possible consequences of air strikes prepared by the British embassy in Belgrade was passed to the Prime Minister. It warned of a serious escalation of fighting in Kosovo, with the VJ/MUP seeking revenge on the Kosovo Albanians. During the following weeks, the British government received a growing volume of evidence that 'Milosevic was building up his tanks, his heavy artillery, and his troops in and around Kosovo.'

Despite these ominous developments it was necessary for the western powers to make preparations for a peaceful settlement to the crisis. If an agreement had been reached at

Rambouillet, KFOR would have had to deploy at short notice. On 6 February, as the Foreign Secretary and Mr Vedrine opened the Rambouillet talks, German, Italian, British and US defence ministers met in Munich and agreed on the structure of KFOR. On the 11th, the Secretary of State for Defence advised the House of Commons of the deployment of the vehicles and heavy equipment of units forming the leading elements of the British contribution. Within a month, some 4,500 British troops had either deployed or were preparing for the move to Greece and Macedonia. They included personnel from the headquarters of the Allied Rapid Reaction Corps, which had been nominated to execute the peace implementation operation in Kosovo under the command of Lieutenant General Sir Mike Jackson. Other NATO members also deployed ground forces to the region in limited numbers or declared their intention to do so.

On 16 February, the Prime Minister met Solana and informed him that the UK was prepared to take whatever military action was necessary to secure the FRY's cooperation. Solana warned that if initial air operations were unsuccessful, NATO attacks would have to continue. Next day, at a meeting attended by the Prime Minister, the Foreign Secretary, the Secretary of State for Defence and CDS, it was agreed that air strikes should be initiated if the Rambouillet talks failed and that the UK should contribute 8,000-9,000 peacekeeping troops in the event of an agreement being reached. On the 19th, the Secretary of State authorised the deployment of the personnel of 4 Brigade Headquarters and the Lead Armoured Battle Group to Greece and Macedonia.

The Rambouillet talks ended on the 23rd with neither side signing the Accords but with consensus being reached on substantial autonomy for Kosovo; both the FRY and the Kosovo Albanians committed themselves to attend a follow-up conference covering all aspects of implementation. The key area of disagreement concerned the FRY's unwillingness to accept the deployment of international troops in Kosovo to underpin a settlement; Milosevic's delegates refused outright to participate in discussions about security arrangements in the province. The Kosovo Albanian delegation demanded a binding referendum on independence after three years, which was vehemently opposed by the FRY government, and the KLA objected to the requirement for demilitarisation and arms decommissioning. As a consequence of these pressures, a clause was added to the Rambouillet Accords proclaiming that an international meeting would be convened after three years

To determine a mechanism for a final settlement for Kosovo on the basis of the will of the people, opinions of relevant authorities, each Party's efforts regarding the implementation of this Agreement, and the Helsinki Final Act, and to undertake a comprehensive assessment of the implementation of this Agreement and to consider proposals by any party for additional measures.

Although this provision ostensibly fell far short of the binding referendum sought by the Kosovo Albanians, they received informal assurances from the US Secretary of State, Madeleine Albright, that it would be interpreted as 'confirming a right for the people of Kosovo to hold a referendum on the final status of Kosovo after three years', if they signed the Accords by a set deadline.

Between 9 and 15 March 1999, senior international figures held talks with both sides to prepare for the next round of negotiations, including Holbrooke and foreign ministers Fisher (Germany), Van den Broek (The Netherlands), Ivanov (Russia) and Papandreou (Greece). None made any notable headway with Milosevic, to whom the presence of foreign troops in Kosovo was unacceptable. As the prospect of military action became increasingly real, the British government began to examine its implications in more detail. On 5 March, the Cabinet Office circulated a paper to ministers on post-air strike strategy that highlighted the political and military risks of bombing, including the possibility that it might trigger a systematic assault on the Kosovo Albanians, unhindered atrocities by the FRY security forces and ethnic cleansing. The paper also warned that there was a lack of coherence in Washington over the objectives of bombing and suggested that air operations would initially be coercive, with the aim of shocking the FRY into compliance with NATO's demands. If substantial force then proved necessary, the declared objective would be to reduce the FRY's capability to repress the Kosovo Albanians. The Prime Minister duly signified his agreement.

Meanwhile, the Foreign Secretary wrote to the Prime Minister noting four conditions that would have to be met before NATO launched air strikes. These were Kosovo Albanian acceptance of the Rambouillet Accords, FRY rejection of the Accords, further diplomatic pressure on the FRY and the Attorney General's confirmation (already received) that military action was legal. For his part, the Secretary of State for Defence advised Mr Blair that heavy first strikes would be necessary if negotiations failed. This strategy, he considered, would both coerce Milosevic into submission and prevent him from attacking the Kosovo

Albanians. The Prime Minister was also warned that Milosevic might well order attacks against the KLA if NATO used force. It was thought that he would probably give way to NATO air strikes, but there could be no certainty that he would do so, nor was it certain that NATO would be able to stop the VJ and MUP. A further letter to 10 Downing Street from the Foreign Secretary was equally cautious. Although, overall, it seemed likely that air strikes would persuade Milosevic to back down, the FRY had plans to launch an all-out offensive in Kosovo, an eventuality likely, in his view, 'to lead to calls for ground intervention, which would be impossible to respond to'. Simultaneously, the British Ambassador in Belgrade outlined what he considered to be 'the worst possible case scenario' in the event of NATO air strikes. Among other things, he drew attention to the risk of revenge attacks by the VJ and MUP on the Kosovo Albanians.

On 15 March, negotiations resumed in Paris, and the Kosovo Albanian representatives signalled their acceptance of the Rambouillet Accords. The FRY delegation then assumed an entirely obstructive posture, claiming that procedural irregularities were preventing substantive discussions. On the 18th, the Kosovo Albanians signed the Rambouillet Accords and the Paris peace talks were adjourned the next day. The co-chairmen insisted there would be no resumption unless the FRY accepted the Accords and warned Belgrade against any military offensive on the ground. By this time, some 40,000 VJ and MUP personnel had massed around Kosovo, and the UNHCR was reporting the presence of up to 250,000 internally displaced persons (IDPs) in the province; a further 180,000 were in need of assistance. On 19-20 March the KVM was withdrawn.

Three of the Foreign Secretary's preconditions for NATO air strikes had now been fulfilled. There remained only the remote possibility that a final diplomatic initiative might succeed where all else had failed. On the 20th, the Foreign Secretary and Vedrine sent a joint message to Milosevic urging him to accept the Rambouillet Accords, but their overture was rejected. Two days later, after meeting the Foreign Secretary, Vedrine, Fisher and Solana in Brussels, Holbrooke again flew to Belgrade in a last-ditch attempt to secure an agreement and avoid bombing. At the same time, the NAC initiated both the limited air response and Phase 1 of the phased air operation, subject to Solana's final authorisation. On the 23rd, Mrs Albright advised the Foreign Secretary by telephone that Holbrooke's mission had failed and declared that military action was inevitable unless Milosevic made concessions. Holbrooke himself told the Foreign Secretary that he had 'never known Milosevic more

defiant or less interested in dialogue'. In a telephone conversation with the Prime Minister, US President Clinton confirmed that air strikes were unavoidable in the light of Milosevic's failure to engage with Holbrooke and the clear FRY preparations for further violence.

In all these exchanges, western political leaders identified Milosevic's unwillingness to discuss the security aspects of the Rambouillet Accords as the fundamental obstacle to a resolution of the crisis, and it is certainly true that the FRY leader adopted an extremely inflexible position during the early months of 1999. Nevertheless, it should be born in mind that the Accords were framed as a *minimum* basis for a settlement and that powerful voices in Washington would have preferred to adopt an even stronger line with Belgrade in the aftermath of the Racak Massacre. Thus, while Milosevic refused outright to offer any concessions, the western powers had little to offer either; there was not much scope for genuine negotiation on either side. Western leaders were also understandably anxious not to fall victim to delaying tactics at the negotiating table while the situation in Kosovo deteriorated steadily, and the FRY finalised its plans for a large-scale offensive there.

However, some western sources have suggested that particular clauses within the Accords might have been amended on the understanding that this would guarantee FRY acceptance. The British government has claimed, for example, that the Status of Forces Agreement was merely a draft that was open to discussion; potentially the Agreement might have been revised to limit NATO transit rights to Kosovo proper rather than extending them throughout the FRY. The problem lay not with specific clauses in the Accords but with Milosevic's steadfast refusal even to discuss the deployment of an international peacekeeping force in Kosovo.

A ministerial meeting to discuss the crisis now portrayed the same doubts expressed previously by the MOD and the Foreign Office. It was felt that heavy air strikes, including attacks on Belgrade, might be needed before the repression in Kosovo ceased. Moreover, there would probably be public demands for intervention on the ground that could not be met because of America's refusal to participate. Notwithstanding these reservations, the Prime Minister confirmed to the House of Commons that the UK stood ready with its allies to take military action. Finally, after consultations with all members of NATO, Solana ordered the launch of Operation Allied Force and announced his decision in a press statement.

The Initial Air Campaign

On 24 March 1999, NATO launched a three-phase air operation over Kosovo that was intended to 'turn the coercive screw' on the FRY with steadily increasing pressure. If Phases 1 and 2 failed to achieve FRY compliance, the air campaign would be broadened in scope under Phase 3. The Phases were defined by their objectives, their target sets and their geographical areas. Phase 1, the primary coercive campaign, attached top priority to the destruction of the FRY's Integrated Air Defence System (IADS): out of 51 targets in Phase 1, 44 were IADS-related. Tactical manned aircraft and non-stealth aircraft involved in Phase 2 were to attack military targets (command and control centres, lines of communication, hostile forces, operations and logistics sites) south of 44°N. Phase 3 extended the campaign throughout the FRY with the aim of 'creating a situation whereby Belgrade ceases to command, control, communicate and sustain military operations in Kosovo. Under the Combined Forces Air Component Commander (CFACC), NATO's COMAIRSOUTH, Lieutenant General Mike Short, target sets were selected by targeting staff at the CAOC at Vicenza, Italy. They were subsequently considered by a Combined Targeting Coordination Board (CTCB)³¹ at the headquarters of NATO's Commander-in-Chief Allied Forces Southern Europe (CINCSOUTH), Admiral James Ellis, in Naples.

In 1998, when it first became clear that military intervention in Kosovo might be necessary, the UK was maintaining a limited RAF presence in theatre under the auspices of Operation Deliberate Forge. The RAF elements committed to Deliberate Forge came under a National Contingent Commander (NCC), the Commander British Forces Italy (Air) (CBFI(A)). The CBFI(A) was an officer of Group Captain rank, who functioned as the UK Senior National Representative (SNR) in the CAOC. All the National Contingent Commanders sat outside the formal CAOC structure in independent National Contingency Commanders Cells, supported by their staffs.

Describing the build-up to hostilities, the CBFI(A) later recorded that all six departments within the CAOC were under the command of US officers, and much of the planning and targeting information was supplied through US-only channels. He continued:

Planning is usually done by US-only staff and only when planning has been completed is it released to SNRs for comment. On a number of occasions, the

first time we have been exposed to a plan is when it is being briefed to General Short for endorsement. During the preparation for operations in Feb 99, the US moved a large number of planning and targeting functions into the US NIC [National Intelligence Centre] and had prepared 2 separate Air Tasking Orders (ATOs), one of which was only releasable to US personnel ... SNRs were rarely consulted at the concept stage and had little influence over the apportionment of assets and the development of the overall plan.

He also described how the NIC had shown 'a marked reluctance to release any information to non-US personnel' and how he was 'expressly forbidden to even approach the US NIC' throughout his tour (which ended just before the operation started). The CTCB was likewise entirely American in composition. In these circumstances, it is hardly surprising to learn that America's NATO allies remained profoundly unsure of Allied Force's precise objectives and the means by which they were to be achieved.

Phase 1 was intended to last for two nights, but the time-scales set for the operation were otherwise remarkably vague. One British document records that SACEUR envisaged a three-to-seven-day campaign with a possible pause after Day 3; another refers to a longer timetable of 28 days. As late as 21 March, only Phase 1 had been planned in detail. The Assistant Chief of Staff Operations (ACOS J3) at PJHQ noted that 'The latter phases require further work.' The next day, General Shelton, the US Chairman of the Joint Chiefs of Staff (CJCS), professed himself ignorant of the Phase 2 targets during a conversation with CDS: 'He had not yet seen the plan.' Such an absence of clarity during the planning process did not bode well for the operation itself.

Allied Force suffered from a number of handicaps from the very outset. First, between inception and implementation, the campaign plan was heavily watered down. The Master Target List agreed by the CTCB included only some of the CAOC's recommendations. For example, out of sixteen bridges identified as critical to the tactical movement of FRY forces, only eight were initially approved; the status of the remainder was left open to question. Other targets were withdrawn from the list by the NAC on legal or political grounds or were deferred pending further consideration. Of 159 targets on the Master Target List on 21 March 1999, only 115 had been cleared by the NAC.

Second, NATO attached a very high priority to force protection. The majority of alliance governments reasoned that even limited casualties would undermine domestic support for the air campaign, which might then disintegrate completely along with NATO itself. Serbia, unlike Bosnia, was protected by a highly capable IADS, which included an air force equipped with MiG 29s, an advanced air defence radar network, SAMs, such as mobile SAM 6s, and man-portable air defence systems (MANPADs). For NATO, this placed a premium on the availability of SEAD assets, which were severely stretched.

A significant proportion of NATO's offensive force was therefore diverted to the SEAD role. At the beginning of Operation Allied Force, a Harrier GR7 package comprised 16 aircraft in the SEAD, CAP/fighter sweep and lookout roles, and 16 bombers. Even then, SEAD 'windows' – the periods when attacking aircraft were protected by SEAD measures – tended to be short in duration so that the bombers could only remain in their target areas for a limited time, during which a range of other factors might prevent them from bombing and cause sorties to be aborted altogether. As a further measure of force protection, the US insisted on an absolute lower operational flying limit of 15,000ft, an altitude from which smaller targets were extremely difficult to identify with the equipment then available. An early observation on Allied Force by CAS was that 'The enforcement of altitude ceilings to reduce significantly the threat to Allied aircraft, has clearly limited both its effectiveness and to some extent its credibility.'

Third, Operation Allied Force was constantly hampered by overcast weather conditions. Flying at medium altitude, aircraft were far less vulnerable to ground-based air defences than they were at lower level, but there was more scope for missions to be disrupted by cloud cover. Cloudy conditions and poor visibility over Kosovo caused many offensive sorties to be aborted in the air or on the ground, complicated the task of air reconnaissance, target location and battle-damage assessment (BDA), and often prevented LGBs and other munitions from being employed altogether. At the time, there was much reference to 'adverse' weather, as if better conditions might reasonably have been expected, but thick cloud cover is entirely normal and predictable over southern Serbia and Kosovo in March and April. The fact is that NATO did not effectively integrate available information about weather patterns in the region into the operational planning process.

This is not to say that the weather was completely ignored. In the months that preceded Allied Force, the Americans developed a poor-weather contingency plan that transferred manned air and F-117 targets to TLAM, CALCM and B2s. However, these were only available in limited numbers and suited to attacks on a relatively narrow range of larger fixed facilities. In the UK, on 12 March, DCDS(C) prepared a brief on 'poor weather options' for Kosovo, pointing out that the Harrier and the Tornado GR1 could operate effectively at low altitude with a range of weapons, but he considered that 'the risk of losing aircraft would be greatly increased compared to medium-level ops ... There is a significant likelihood that there would be coalition AC losses.' Such risks could not be contemplated because of the critical importance attached to force protection. Essentially, by pushing NATO aircraft above the clouds, the FRY's ground-based air defences achieved a limited but important victory without firing a shot.

Finally, the NATO allies imposed severe constraints on participating air forces to reduce collateral damage and non-combatant casualties to the absolute minimum. These restrictions partly reflected political sensitivities regarding media and public opinion, but legal considerations were equally influential. The justification under international law for initiating Operation Allied Force may have been the subject of some debate, but there can be no doubt that the operation was executed under the most scrupulous and detailed legal supervision. Numerous aircraft returned to base with their weapons after failing to identify targets or because of fears that there might be civilians in the target area, and many missions were cancelled on the ground when it became clear that the strict criteria for releasing weapons could not be satisfied, usually because of poor weather. Concerns over collateral damage also delayed the extension of NATO's target list, as Alliance partners disagreed over the constitution of genuinely 'military' targets and prevented the employment of key weapons.

In short, NATO air forces began Operation Allied Force with a truncated campaign plan, the execution of which was hampered by overcast weather conditions and the need to minimise casualties and collateral damage. Against an adversary demonstrably capable of enduring heavy casualties and economic deprivation, which happily targeted civilians and their property, and which was prepared to exploit every military means available, NATO therefore began Allied Force with less of an advantage than is sometimes supposed.

Operation Allied Force opened with an attack on the FRY IADS, employing cruise missiles and some 400 aircraft provided by thirteen NATO air forces; 40 locations were targeted. The intention was to establish air superiority over Kosovo and southern Serbia as the essential prerequisite to the second and third phases of the campaign plan. The FRY responded by breaking off diplomatic relations with the leading NATO powers, declaring an internal state of war and unleashing the full force of the VJ and MUP. During the following days, as cloudy weather disrupted the air campaign, ethnic Albanians were driven in their thousands from Kosovo's more northern and westerly towns and villages, which were looted and set on fire.

Atrocities were widespread. On the 25th, refugees reported that more than 60 men had been executed at Bela Crkva and that 20 teachers had been massacred in front of their pupils near the Albanian border; on the 26th, the US produced an air photograph showing evidence of a mass grave at Velika Krusa, where 40 Kosovo Albanian men had been killed by the FRY security forces according to human rights workers. On the 30th, the VJ reportedly shelled the Pagarusa Valley, where thousands of civilians had sought refuge. In the face of this indiscriminate and barbaric assault, an enormous tide of refugees abandoned Kosovo for the safety of neighbouring Albania and Macedonia. An estimated 440,000 people, one quarter of the total population, left between 29 March and 6 April alone. By 12 April, FRY ground forces had displaced 1.3 million Kosovo Albanians out of a total population of 1.8 million.

Many observers had anticipated precisely this eventuality. Nevertheless, the reaction of individual NATO members suggests that they originally harboured hugely optimistic expectations of Allied Force's capacity to achieve their goals almost immediately – expectations chiefly based on an inaccurate appreciation of the role of air power in ending the war in Bosnia-Herzegovina. In Washington, the State Department was reportedly 'baffled' by the turn of events in Kosovo. On 29 March, the British government convened a ministerial meeting on the crisis, which concluded that 'The air campaign has so far been less successful than predicted.' In other words, it had failed, in just six days, to coerce Milosevic into accepting the demands of the international community. The Prime Minister's 'growing frustration at the lack of success of the air campaign' was recorded on the 30th.

Unfortunately, Allied Force was not supported by a contingency plan – a clear alternative concept of operations – that might have been pursued if Milosevic refused to succumb to

the initial air strikes or if he responded by retaliating against the Kosovo Albanians. A so-called 'Response Option' had been prepared, the response being 'to Serb aggression in Kosovo', but it added only 21 additional targets to the phased air operation. Phases 2 and 3 of the air campaign were aimed at the general FRY military capability – infrastructure, command and control, communications, supplies and storage – rather than deployed FRY troops in Kosovo. The absence of detailed contingency planning together with the limitations of the Allied Force target list, helped the FRY to seize the initiative in Kosovo and shape profoundly the subsequent course of air operations. NATO came under immediate political pressure to protect the Kosovo Albanians by attacking fielded VJ and MUP forces – a task contemplated by senior air commanders with very little optimism or enthusiasm. On 27 March, Solana consulted member governments and found them unanimously convinced that the air campaign should strike deployed FRY units in Kosovo, and the alliance then publicly announced that the focus of the campaign was being broadened to include such targets. Thus was NATO diverted *within three days* from the original phased operation.

Under these improvised arrangements the phased air campaign and the attacks on forces in Kosovo were theoretically to proceed in tandem. However, there was in fact a marked diversion from the former to the latter, which was soon exacerbated by a shortage of targets. In part, this reflected the limited scope of the original air campaign plan. A memorandum prepared by DAO on 8 April stated that although fewer than half the 301 selected targets had been attacked, a high proportion of the remainder – non-military infrastructure or targets in Belgrade – had yet to be approved. 'There is currently a considerable number of targeting exclusions,' he wrote. 'Aircraft are already revisiting some targets.' A strategy of repeated attacks on targets that had already been bombed, purely for the sake of bombing, was unlikely to increase the pressure on Milosevic.

The alliance's targeting approval process was both slow and laborious. Indeed, it proved impossible to progress directly from Phase 2 to Phase 3, and an intermediary stage, Phase 2 Plus, was adopted instead. Even this had to be introduced through the medium of NATO's permanent NAC rather than through the Ministerial NAC. According to the UK representative at NATO, Sir John Goulden, it would have been impossible to secure the alliance's full agreement to Phase 2 Plus 'if it had been necessary for individual ministers to describe and justify the decisions before the Brussels press'. By contrast, authorisation was far more readily forthcoming for strikes against fielded forces in Kosovo.

Additionally, SACEUR himself, General Wesley Clark, quickly began to manifest a marked preference for attacks on military targets in what became known as the Kosovo Engagement Zone (KEZ), favouring them over the broader target sets of the original phased campaign plan. This might not have been important had NATO's command structure functioned as it was supposed to during Operation Allied Force, but it did not. Theoretically, on SACEUR's behalf, Allied Force should have been commanded by CINCSOUTH, Admiral Ellis, who also functioned as the commander of US Joint Task Force (JTF) Noble Anvil – the American task force committed to operations over Kosovo. From Ellis, the formal command chain ran down to Lieutenant General Short as COMAIRSOUTH and CFACC, and then to the Italian Commander Fifth Tactical Air Force (COMFIVEATAF) and the Vicenza CAOC.

Yet the reality was very different. In practice, SACEUR, based in Mons, Belgium, largely bypassed CINCSOUTH and worked directly down to COMAIRSOUTH and the CAOC. Perversely COMAIRSOUTH then observed the correct channels by working back up to CINCSOUTH. The relationship between SACEUR, Commander JTF/CINCSOUTH and the CFACC/COMAIRSOUTH was described as 'doctrinally incoherent' in one RAF report. 'It was not clear who was responsible for what, and the accepted boundaries of responsibilities between the levels of warfare were frequently compromised.' The preponderant American role within Allied Force also allowed senior US officers from beyond NATO's southern command chain to exert influence, such as the Commander of USAF forces in Europe (COMUSAFE, based at Ramstein, Germany), who also functioned as NATO's COMAIRCENT.

As for the CAOC, it was (as we have seen) substantially an American creation, which had been established earlier in the decade because COMFIVEATAF lacked the means to exercise effective command and control of Operation Deny Flight. It functioned under the direct command of COMAIRSOUTH rather than COMFIVEATAF and was already serving as a combined air headquarters and air operations centre before Lieutenant General Short chose to locate himself there rather than at ASFSOUTH headquarters Naples in 1998.

SACEUR was answerable to the NAC but was also in close contact with the United States Joint Chiefs of Staff. This pressure from above was one factor in his tendency to circumvent the established command channels. He was also temperamentally inclined towards an interventionist approach to high command, and his tendency to micromanage was

encouraged by a new development – the provision of a live Predator video feed from Serbian airspace directly into his Mons headquarters. Nevertheless, the shorter command chain was primarily favoured because it was an American chain. With the US providing the vast majority of aircraft committed to Allied Force, it was perhaps inevitable that there should have been a reluctance to delegate higher command functions to other NATO countries, but there were also doubts about NATO's competence in the field of command and control, and concerns about operational security within the alliance persisted throughout the campaign. This was the context within which General Clark's focus on the KEZ became particularly significant.

Yet operations over the KEZ raised particularly acute difficulties. Medium-altitude flying was one serious handicap for NATO air forces. As DAO put it, 'visually identifying small armour/artillery targets is difficult by day above 15,000ft. By night it can often be impossible without FAC [Forward Air Controller] assistance.' Moreover, in the FRY, NATO confronted an opponent adept in the art of passive air defence – in dispersal, camouflage, concealment and tactical deception. After NATO leaders openly declared that they would not launch an opposed ground operation into Kosovo, FRY forces hid their heavy artillery and tanks in underground bunkers, maintained widely dispersed troop dispositions and deployed dummies and decoys to impressive effect. They also received ample forewarning of many NATO strikes through their radar network (including early warning radars in Montenegro, which the alliance was unwilling to target), a highly competent visual reporting system, SIGINT and other intelligence sources. Their command, control and communication structure was designed to disseminate this information very rapidly throughout the command chain, from senior officers at headquarters down to tactically deployed units. Allegedly, it was so effective that troops in some target areas were given a countdown to the NATO time-on-target against which they could plan their departure.

Thus, by early April, NATO had become embroiled in an air campaign for which it had no plan against a very well-prepared adversary and in conditions far from conducive to the achievement of fast or decisive results.

The Harrier Deployment

On 31 January 1999, HQ STC issued an Amplifying Instruction to 1(F) Squadron concerning their participation in Operation Deliberate Forge. Against the background of the Rambouillet peace talks, the squadron was directed to deploy to Gioia del Colle from 19 February to 30 June 1999 to assume commitments previously undertaken by 4(AC) Squadron. While they remained under Full Command of the C-in-C Strike Command, they were placed under the Operational Control of SACEUR, who in turn delegated command through the NATO chain to the CFACC. Their task was to operate up to eight Harrier GR7s in theatre as part of the NATO-led Stabilisation Force (known as SFOR) and protect friendly forces in the FRY.

On 15 February, the first three members of the squadron deployed to Italy, one proceeding to the CAOC to assume the post of GR7 Unit Representative, the others to Gioia del Colle; they flew their first Deliberate Forge sorties the next day. The OC 1 Squadron followed them on the 18th and a further eleven pilots were in theatre by the 27th. The squadron engineers deployed during the same period. The squadron flew a mixture of day and night sorties over Bosnia-Herzegovina for the remainder of the month, including Composite Air Operations (COMAOs) and air-to-air refuelling over the Adriatic.

This pattern continued in the first three weeks of March, during which time two additional pilots arrived from the UK. However, on the 19th, the second round of peace talks in Paris collapsed when the FRY delegation refused to sign the Rambouillet Accords. On the 23rd, the Prime Minister declared that the UK was ready to take military action with NATO partners to enforce the withdrawal of FRY forces from Kosovo, and 1(F) Squadron flew their first Allied Force mission on the night of the 24th. The squadron was authorised to employ precision-guided weapons alone, which normally meant the TIALD-designated UK Paveway II. For more robust targets such as tunnels, runways and large or complex buildings, the GR7s could carry a single 2,000lb Paveway III.

As we have seen, the air campaign was run according to US doctrine with all sorties being flown at medium level. The US was also responsible for selecting targets, all of which had to be endorsed by NATO and, in the UK, approved by the Attorney General. Attacks involving RAF aircraft were subject to a UK Targeting Directive (TD) issued by CDS, which was repeatedly updated as the operation progressed. The TD declared that the aim of British

military intervention was to reduce the Serbs' capacity to repress the Kosovo Albanian population. Offensive operations were to be subject to the British government's declared objectives, to UK and international law, to geographical areas defined in the appropriate ROE and to 'the need to avoid actions which would undermine domestic or international support for the use of armed force'. Any risk to British forces was to be kept to 'a minimum commensurate with the military gain from the attack', and attacks were to be confined to targets in the FRY. All military action was to be limited to what was necessary and proportionate to the achievement of the declared military objective.

Most of all, participating British forces were directed to minimise the risk of collateral damage. The Targeting Directive stated explicitly that attacks were to be directed against military targets; neither civilians nor civilian infrastructure were to be targeted directly, and every effort was to be made to minimise civilian casualties and damage to civilian property or to sites of religious and cultural significance. At first, there were no targeting delegations at all. All targets assigned to UK assets had to be referred back to the responsible MOD authorities for evaluation. This is one reflection of the fact that NATO only expected Allied Force to last for a few days.

The first Harrier GR7 mission, against an explosive storage facility at Pristina, involved six aircraft, four attacking the target using self-designated Paveway II LGBs, two others acting as look-outs. The target area was largely obscured by smoke and fires caused by earlier bombing, and only one of the GR7s released its weapons. Unfortunately, the LGBs failed to guide because of smoke obscuration. This was hardly a propitious beginning to the operation, but the squadron sought to learn from the experience. The mission was followed by a 'massive brainstorm' session over target selection and the relative merits of co-operative strikes and self-designation. The following day's target was an army barracks at Leskovac. This time, the crews selected three aiming points located at some distance from one another; the greater the distance, the less chance there was of the second or third becoming obscured by smoke from earlier attacks. Each aiming point was assigned to a pair of GR7s employing co-operative designation. The first bomber was prevented from releasing its weapons by a computer malfunction, but the second hit the first target, and the third target was also successfully attacked.



Harrier GR7s regularly participated in operations over the former Yugoslavia in the 1990s; this photograph was taken during Operation Deliberate Guard in February 1997.



Harrier GR7s at Gioia del Colle, shortly before taking off on an Allied Force mission; each aircraft is carrying four RBL755 cluster bombs and two AIM-9L sidewinder missiles.

The GR7s executed another successful strike on 28 March, targeting an explosive storage facility in Pristina. Apart from being 1(F) Squadron's first successful self-designating mission, the attack was notable for an incident in which the radar warning receiver (RWR) of one GR7 was activated by the radar of a friendly fighter. The GR7 pilot had previously been warned of a possible RWR ambiguity between certain fighters and SA3s, and he therefore jettisoned his bombs and fuel tanks immediately and executed an evasive manoeuvre. In a similar episode during Operation Granby (the first Gulf War), a British Tornado pilot assumed an RWR warning to be false and was shot down by an Iraqi SA-3.

On all other days during this first phase of the campaign, poor weather caused the planned GR7 missions to be aborted on the ground or in the air. A single daytime mission dispatched on 30 March to bomb tactical targets in Kosovo returned to base untasked after orbiting for some time off the Albanian coast. Overall, 1(F) Squadron flew 51 night sorties and six day sorties on Operation Allied Force during March 1999; the squadron engineers worked around the clock in twelve-hourly shifts to maintain 100 per cent serviceability on most days. Nevertheless, by the end of the month, only two successful attacks had been executed.

Tactical Command and Control

Tactical command and control for Operation Allied Force was assigned to the NATO EW force drawn partly from the RAF's E-3D squadrons – 8 Squadron and 23 Squadron – based at Waddington. They could at first provide seven crews, all of which were 'constituted' – in other words, the same crew members always flew together. Operational effectiveness unquestionably benefited from the understanding and familiarity that this arrangement engendered. At first, three crews deployed to Aviano air base in Italy together with three aircraft, but they were joined by a fourth crew after hostilities began. Aircrew were subsequently rotated between Aviano and Waddington. E-3D crews consisted of three elements – the flight-deck, the mission crew and the communications operator and airborne technicians. The Tactical Director headed the mission crew, which consisted of surveillance and weapons teams.

Primarily equipped for the Cold War airborne warning task, the E-3D was not a fully-fledged command and control asset; it was equipped with only nine consoles, whereas the USAF's E-3Cs possessed 14. The crews deployed to Aviano each included an additional weapons

controller (three as opposed to the usual two) – a provision that reflected the expectation of high tasking levels and one that had already proved essential during Operation Deliberate Force in 1995. However, to accommodate the extra console, it was necessary to dispense with the Electronic Surveillance Measures (ESM) console or a surveillance operator. The displacement of either crew member inevitably had a direct impact on the quality of the Surface and Recognised Air Picture and could affect the timeliness of threat warnings. Ultimately, the on-board Tactical Director, who headed the mission crew, had to allocate the limited number of remaining consoles on a priority basis that took into consideration the intelligence situation, the size of the ATO and the position of the E-3D's orbit.

The totality of NATO airborne C2 coverage consisted of three orbits in the Balkan region – Bikini in the north, Fluffy in the centre and Pluto in the south. Pluto would quickly prove the most challenging due to the volume of control tasks; many of the AAR tracks were located in the southern orbit. Coverage had to be maintained for 24 hours per day with the RAF responsible for 25 per cent of the task. They typically flew two daily missions, chiefly in the Bikini orbit, with on-station periods from 0600-1200 and 1800-2400.

Their first mission was flown on the evening of 24 March, when multiple NATO strike packages attacked Serbia. One of these, consisting of USAF F-15s, F-16s, F-117s, tankers and a number of other aircraft, had just reached Serb airspace from the north, when the on-task 8 Squadron E-3D detected radar contacts in the area of Batajnica airbase. Correlated electronic surveillance information then confirmed that two MiG 29s had been launched, the F-15s were duly warned, and both Serb fighters were shot down.

On 27 March, another 8 Squadron crew were on station in the Bikini orbit when they heard a Mayday call from an American pilot on the 'Guard' or Military Air Distress frequency (243 MHz), stating that his aircraft had been hit. In a second call about a minute later, the pilot (callsign Vega 31) confirmed that he was baling out. As his aircraft was an F-117 and a US 'national' asset, the E-3D crew had very little information about his mission but nevertheless remained on station, extending their time on duty to control and co-ordinate his rescue.



An Royal Air Force E-3D at Aviano during Operation Allied Force.

After alerting the CAOC, the E-3D broke orbit and moved east to achieve better communications and radar coverage of the Belgrade area, accepting the greater risks involved. While it never subsequently came within communications range of the pilot, his fighter escorts established contact with him, and other combat aircraft – ground-attack and SEAD assets – were quickly diverted to support a Combat Search and Rescue (CSAR) mission. The change of tasking caused their fuel requirements to rise substantially, requiring the E-3D to overhaul AAR plans and request more tankers, which soon arrived. About one hour after the first Mayday call, the E-3D crew were advised of the pilot's location, which was quite close to the Serb border.

As the CSAR force assembled, the E-3D coordinated the supporting aircraft to ensure that all, suitably refuelled, were ready to enter Serbian airspace at the same time – during the ingress of the rescue helicopter and an accompanying A-10, which functioned as local tactical commander for the entire CSAR package. At this critical stage, the E-3D detected a helicopter flying from Belgrade towards the crash site. The Serbs were attempting to get there first, having established Vega 31's position via SIGINT or triangulation. The crew sought and received permission to engage the helicopter, which was relayed to the on-station F-15s. They duly changed course to intercept, but their prospective target then conducted an immediate 180-degree about turn. No other Serbian aircraft were launched, although their ground-based air defences were very active and made extensive demands on the American SEAD. Ultimately, the rescue helicopter successfully reached the crash site, collected the F-117 pilot and recovered to friendly territory. Among the congratulatory messages awaiting the E-3D crew on their return to Aviano was one from the President of the United States.

The Intensification of the Air Campaign

The situation that emerged from the first fortnight of the air campaign necessitated a wholesale revision of NATO strategy towards Kosovo, a revision undertaken at national and alliance levels at the end of March and in early April. The most consistent theme to emerge in this period was the conviction that NATO must not lose. In a telephone conversation on 5 April, the Prime Minister and President Clinton acknowledged that 'NATO has to win if it is to survive' and noted that there was a 'renewed determination within the alliance to do so'. It was equally important to defend NATO's position in the international arena. Alliance

members therefore sought to stand firm against a Russian-drafted UNSCR condemning NATO's action, eventually ensuring its defeat by 12 votes to 3. Certain minimum demands were made of the FRY leadership. In particular, NATO insisted that a verifiable withdrawal of VJ and MUP units from Kosovo would have to be initiated before there could be a pause in the air campaign. Alliance partners also began to consider a broader range of strategic goals – a desirable 'end state' – that took account of how circumstances in Kosovo had changed since the preparation of the Rambouillet Accords. In this context, 'the unconditional and safe return of all refugees and displaced persons' assumed a more prominent place among NATO's objectives.

From a military perspective, the most important requirement was to increase the effectiveness of the air campaign, thereby regaining the initiative from the FRY. The UK ministerial meeting of 29 March agreed that the 'campaign needs to be intensified to cause real pain. NATO should not be constrained from doing maximum damage.' On the same day, the Prime Minister and President Clinton accepted 'the need to intensify air strikes and to hit targets that would hurt Milosevic'. The most direct means of intensification was to increase the firepower available to SACEUR, for the NATO air component was at first not sufficiently strong to inflict very serious damage on the FRY's military machine. According to NATO's early briefings and press releases, between 400 and 500 aircraft (including naval aircraft) were theoretically available during the first fortnight of the air campaign, but only around one third of the sorties flown took the form of *offensive* sorties and many of these were flown in the SEAD role. More than two thirds of NATO's operational effort comprised SEAD, airborne command and control, airborne early warning, electronic counter-measures, combat air patrols, reconnaissance, AAR and other support functions.

In other words, in the best possible weather conditions, NATO could only mount between 130 and 140 offensive sorties per day, including SEAD sorties. In practice, weather conditions were far from favourable and many NATO aircraft were not capable of bombing through cloud. Although NATO's force of offensive manned aircraft was supplemented by air-launched and sea-launched cruise missiles, the fact remains that it was primarily designed to fulfil the original and very limited operation plan. It was manifestly not suited to the task of maintaining a carefully constructed and militarily effective campaign in the longer term.

By the second half of April, although NATO's force had been raised to more than 600 aircraft, this was still not generally reflected in the daily sortie rate because of continuing overcast weather, airspace restrictions and the limited availability of SEAD and AAR. During the first 40 days of the operation, NATO completed 15,394 sorties but only 4,036 offensive sorties. In other words, the average daily number of air sorties during this period of the operation was only 385, and the number of offensive sorties was just 101.

The Harrier Detachment in April

At Gioia del Colle, 1(F) Squadron was reinforced through the deployment of four more aircraft, bringing the total to twelve; additional personnel from 3(F), 4(AC) and 20(R) Squadrons increased the number of pilots to 24 and groundcrew to 150. The aircrew were only assembled with difficulty. The RAF introduced special measures to manage leave, freeze postings and recover pilots recently posted from the Harrier force, but the scope for longer-term sustainability remained uncertain. Initially, the detachment was divided into two separate teams. The first was engaged in daytime operations over the KEZ against tactical and fixed military targets, chiefly employing RBL755 cluster munitions and 1,000lb freefall bombs; the second flew missions against fixed military and transportation targets with LGBs at night. However, in time, virtually all aircraft were committed to daytime missions against deployed FRY forces and their supporting infrastructure in Kosovo. In total, the GR7 detachment flew 246 sorties during April.

As the air campaign progressed, the UK TD was substantially revised to elaborate on NATO's basic objectives, stating that they would 'be achieved by severing command and control links and lines of communication between Belgrade and Serb units in the field, degrading the operational capability of those deployed units, whilst simultaneously degrading the military infrastructure that supports Serb aggression'. Proper targeting delegations were also introduced and gradually extended. The main delegated military target categories were lines of communication, petrol, oil and lubricants, military and Ministry of Interior headquarters, barracks, military equipment and ammunition storage, airfield facilities, IADS, military vehicles, troop concentrations and staging areas. Formal measurements were introduced for the two associated risks of civilian casualties and collateral damage. These were based on the number of civilian casualties expected and the distance of the target from civilian objects. Under both headings, the risks could be assessed

as low, medium or high. The delegations to CBF1(A) covered targets with a low civilian casualty risk and a low or medium collateral damage risk. However, any target assigned to RAF aircraft that carried a medium or high civilian casualty assessment or a high collateral damage assessment required clearance from the Attorney General, CDS (or DCDS(C)) and the Secretary of State. Additionally, targets in Belgrade, presidential residencies, industrial targets and state media targets required the Prime Minister's approval.

Poor weather interfered with KEZ operations at the beginning of April, and serviceability problems with a command and control aircraft also caused several missions to be aborted. The first successful strikes in the KEZ therefore occurred on 6 April, when ten GR7s attacked four separate targets with RBL755s, including tanks and a convoy of between fifteen and twenty military vehicles. Overall, the GR7s completed KEZ missions on 18 days during the month. They were integrated into packages that included SEAD platforms such as EA6Bs, F-16 CJs, German PA-200 Tornado ECRs,³² Rivet Joint and Compass Call aircraft. Targets were allocated dynamically by airborne A-10s and F-16 CG Airborne Forward Air Controllers (AFACs), and included FRY police and army units, military vehicle compounds, storage areas, barracks, radar and communications installations, SAM batteries, field artillery and tactical command and control posts.

On one or two occasions during April, the GR7s did not receive any tasking from the CAOC, and on several days – the 18th, 21st and 23rd, for example – adverse weather again prevented them from flying. However, many of the aircraft that actually took off and reached the KEZ did not release any munitions. There were two basic reasons for this. First, the RAF's Paveway II and III LGBs could not be guided accurately through cloud, and the prevailing overcast conditions also prevented the use of other weapons. Second, the AFACs often left the GR7s untasked after VJ and MUP targets failed to materialise. After a few days, the GR7s were permitted to release unguided 1,000lb bombs and RBL755 cluster bombs through cloud on to GPS co-ordinates. Initially, however, engagements of this type were made subject to the Secretary of State's approval.

At the same time, so-called 'Kill Box' targets were introduced. CDS's revised TD of 3 April 1999 described the concept:

Kill Box Operations. You are authorised to delegate authority to CBF(I) to allow UK aircraft to attack targets which represent an immediate or emerging immediate threat to NATO Forces or Kosovar Albanians in designated areas (Kill Boxes) when planned as part of a specific operation, keeping me [CDS] informed.

The term 'Kill Box' was not new, but it apparently incurred official displeasure in the context of Allied Force and was soon replaced in the TD by 'VJ/MUP engagement areas' and then by 'VJ/MUP operating, assembly and staging areas'. Finally, these categories of target were referred to simply as 'Assembly Areas'.

The language evolved, then, but the basic concept remained the same. The GR7s were effectively authorised to bomb pre-designated areas where satellite or reconnaissance photographs or other intelligence sources, such as the KLA or coalition Special Forces, suggested the presence of FRY troops, military vehicles or artillery. If primary targets could not be identified or failed to satisfy the ROE, and an alternative target was located in one of the designated areas, the GR7s were permitted to attack it. The attacking pilot was required to determine that the risk of civilian casualties was low; it was also necessary for the AFAC to mark the target and confirm that it was military, although unmarked targets could be bombed if they were identified as military by the attacking pilot. The GR7s executed a substantial number of strikes in accordance with this new procedure in the first half of April. For example, on the 12th and 13th, ten GR7s dropped 1,000lb bombs through cloud on to GPS coordinates within designated areas.

Area attacks then came to an almost complete halt: only two GR7s bombed area targets between 16 and 30 April. Cloud cover was cited as the reason for aborting an area strike on the 19th, and the precautions governing these attacks would certainly have been difficult to satisfy in the generally overcast conditions that prevailed in the second half of the month, but there was an additional problem. The detachment's primary targets in this period were invariably fielded forces in Kosovo; hence the GR7s normally carried RBL755 cluster bombs. Yet RBL755 was often unsuitable for bombing fixed facilities, which were the only targets aircraft could realistically hope to strike if cloudy conditions thwarted their primary missions. This was due to the time involved in obtaining engagement authority from the Secretary of State. At first, the GR7s were not allowed to carry mixed bomb loads, but 1(F) Squadron

sought permission for simultaneous carriage of RBL755 and 1,000lb free-fall bombs on 12 April.

In the absence of assigned targets, the GR7s sometimes flew pre-briefed reconnaissance routes, employing their VICON pods to obtain imagery for subsequent missions. Pilots allocated to morning KEZ tasks were briefed on the target locations for afternoon missions so that they could gather imagery to support planning and briefing. To assist, photographic interpreters from the RAF's Jaguar reconnaissance squadron (41 Squadron) deployed to Gioia del Colle.

The GR7s rarely employed LGBs during April. On the 5th and 19th, self-designated Paveway IIs were released on to SA6 facilities at a petrol, oil and lubricant (POL) depot – a large target complex to the north of Pristina airfield, where there were several storage buildings and earth-covered storage bunkers. Two buildings were destroyed in these attacks and one was severely damaged. On 30 April, the GR7s bombed two separate targets – an EW site at Kaponik and the Mure railway bridge over the Ibar river. A Paveway III narrowly missed its aiming point on the 24th but destroyed its target, nonetheless. On many days, however, KEZ missions received top priority, and cloud cover remained an insuperable obstacle to LGB strikes. The pilots who attempted to drop free-fall 1,000lb bombs on to a GPS position when cloud cover prevented the use of LGBs achieved some success on 11 April, when TIALD imagery showed impacts close to the aiming point and evidence of burning and secondary explosions, and on 13 and 14 April. Yet on 12 and 20 April (and on several other occasions), cloud or smoke obscuration prevented BDA. Laser-guided bombing was always the preferred option for the GR7s and resumed when the weather improved at the end of the month.

It was NATO policy throughout Operation Allied Force to minimise attacks on Montenegro and focus as much effort as possible on Serbia and Kosovo itself, but the Montenegrin airfield of Podgorica served as a base for Yugoslav Air Force Super Galeb and other aircraft, which were judged to pose a threat to refugees in Kosovo and to NATO forces. On 28 April, two GR7s equipped with Paveway II participated in an attack on the airfield and accurately bombed their targets.

Tornado GR1 Operations from Bruggen

Operation Allied Force required RAF squadrons to fly combat missions from a home base for the first time since the end of the Second World War. On 28 March, four days after the first GR7 sorties of the operation, the Secretary of State for Defence announced the commitment of eight Tornado GR1s to NATO's air campaign. Without any warning, RAF Bruggen was tasked to provide these aircraft with the aim of mounting six sorties per night over Serbia and Kosovo. The GR1s were to operate at medium level and employ self-designated Paveway II and III LGBs.

After the ceasefire, the decision to base at Bruggen was called into question by such bodies as the House of Commons Defence Select Committee, for it proved extremely difficult to sustain Tornado operations from an airfield so far from Serbia. In response, the RAF argued publicly that the limited GR1 flying rate originally envisaged had appeared achievable from Bruggen. The reality – classified at the time – was that forward basing would have been very problematic in March or April 1999 and probably subject to significant delay, whereas the GR1s were required to contribute to Allied Force immediately.

The Tornado GR1 to GR4 upgrade programme was one complicating factor, but the key difficulties reflected competing operational pressures on the RAF's fast jet fleets. The TIALD pods essential for LGB missions were in desperately short supply, and relatively few aircrew at Bruggen had much experience with the system or had benefited from recent TIALD training. By operating from the base, it was possible for the RAF to establish a composite unit from the three resident GR1 squadrons to pool available TIALD expertise. Bruggen's TIALD specialists, 14 Squadron, were assigned the lead role and contributed ten crews to the composite unit; they were supported by eight crews from 31 Squadron, while 9(B) Squadron provided six spotter crews. Both these squadrons normally flew in the SEAD/attack role. The unit was subdivided into four formations. Each consisted of six crews and operated a four-day working cycle. With a view to long-term sustainment of the air campaign, other crews from all three squadrons formed a Wing Training Squadron known as the 'crèche'. In this way, Bruggen's resources and operationally configured aircraft could be used to support both operational flying and training simultaneously in a way that would not have been possible if a GR1 detachment had deployed forward. In time, this generated more qualified crews, allowing the RAF to consider forward basing later in the campaign.

Command and control arrangements for the Bruggen GR1s were somewhat complex. While full command rested at all times with the AOC-in-C STC and Operational Control belonged to CJO, the aircraft came under the Tactical Command of the Station Commander at RAF Bruggen while they were located there. In transit between Bruggen and the CAOC's area of responsibility (AOR), they were subject to the Tactical Control of 38 Group, which was tasked to provide AAR, but Tactical Control passed to SACEUR when they entered the CAOC's AOR and was exercised by the CAOC itself.

RAF Bruggen was directed to bring four GR1s to readiness for operations by 31 March and a further four by 1 April. Engineers from both 14 Squadron and 9(B) Squadron began operating a three-shift system to provide 24-hour support seven days per week. The other two GR1 main operating bases (MOBs) were tasked to prepare a further 11 aircraft, which were then flown to Germany. To meet the required timescale, HQ STC granted several concessions, so that some of the aircraft that reached Bruggen had not been prepared to the designated standard, and it took time to ascertain how much work had yet to be completed. Nevertheless, the fleet of 19 aircraft was eventually refined down to 16 – an operational requirement of 12 plus four spares – and the three least suitable aircraft were returned to their MOBs.

The GR1 detachment began intensive training on 29 March, involving medium-level LGB attack profiles, TIALD re-familiarisation sorties, EW training at Spadeadam Range and AAR practice. The first operational tasking arrived from Vicenza on 1 April for the evening of the 2nd, but the mission was cancelled at the last moment due to poor weather in the target area, and the next night's mission was called off for the same reason – an unpromising start. So the first RAF Tornado GR1 sorties of Operation Allied Force were not launched until the night of 4 April, when four 14 Squadron bombers armed with eight Paveway IIs set out with two 9(B) Squadron aircraft acting as lookouts and 'shooters'. Their targets were the Jezgrovce highway bridge and a river bridge and tunnel on the Mure railway.

The first bomber to attack the highway bridge narrowly missed its aiming point with one bomb, but the other missed the target, which was undamaged. The second hit the target with one bomb, but the second again fell short, and the third GR1 achieved a similar result against the rail river bridge. Given the narrow width of this target, the crew believed that Paveway III would have been a more suitable weapon than Paveway II. The fourth aircraft

hit and severely damaged the rail tunnel. In total, four out of eight bombs released during this mission struck their aiming points. On the following night, four aircraft from 31 Squadron equipped with Paveway IIIs were tasked against the Pristina POL storage facility and ammunition storage buildings at the same location; again, two aircraft flew as lookouts. The ammunition stores were hit and damaged, but the two bombs intended for the POL storage site missed their targets. As the 31 Squadron crews had not received very much TIALD training, they did well to match 14 Squadron's hit rate during this first mission, not least because Paveway III was a more difficult weapon to aim than Paveway II, which was launched closer to the target.



A Tornado GR1 emerging from its hardened shelter at RAF Bruggen before a night mission over the FRY during Operation Allied Force.



RAF armourers loading a Paveway II LGB on to a Tornado GR1 at RAF Bruggen during Allied Force.

On the evening of 6 April, 14 Squadron crews mounted four sorties against buildings forming part of the Pristina army barracks complex. Employing self-designated Paveway IIs, the first three aircraft bombed accurately, while the fourth found its target obscured by smoke but successfully guided its bombs on to an alternate aiming point. Two of the buildings were destroyed and one was seriously damaged, while a fourth suffered more moderate damage. Mission planning continued on a daily basis for the remainder of the month, but the GR1s only released weapons on five other occasions due to poor weather in the target area or in transit. Furthermore, one of these five missions ended in total failure when three out of four TIALD pods became unserviceable as a result of icing and rain during the outward flight, and the fourth aircraft missed its target. The four other missions released a total of 20 Paveway IIs and three Paveway IIIs; 14 of the former and all three of the latter hit their targets.

The Paveway IIIs were released by 31 Squadron crews on 30 April against the Valjevo ammunition production plant. The Paveway IIs were dropped by 14 Squadron crews on 13, 15 and 29 April on Yugoslav Air Force bases at Obrva, Nis and Podgorica, and on an

ammunition production plant at Cacak. When the operational training task and TIALD pod availability allowed (Bruggen had just six pods at the beginning of the operation), the accompanying spotter aircraft were flown in the TIALD/LGB configuration to provide a reserve to cater for unserviceabilities among the primary bombers. One such aircraft participated in the attack on the 29th. On a number of other occasions – on the 19th and 23rd, for example – aircraft succeeded in reaching their target areas but did not release weapons because the targets were obscured by cloud. When aiming points were located close to the civilian population and there was a high risk of collateral damage, the ROE prevented weapon release if the navigator could not identify the target on the TIALD pod display or if other considerations suggested that bombs might not guide successfully.

The early attacks established several standard practices that were maintained during the majority of GR1 missions throughout the operation. Flying in two formations of three, each consisting of two bombers and one spotter, the GR1s were normally tasked against four aiming points in relatively close proximity but sufficiently spaced to prevent smoke from the first formation's attack from obscuring the target for the second. Like the GR7s, they always formed a component part of a much larger package, which could only remain in the target area if SEAD assets were present. This gave the GR1s a fairly limited time-over-target window during which they had to remain within the geographical limits of the aircraft flow dictated by the package commander, follow the optimal attack direction, minimise the potential for collateral damage and maintain visual cross-cover.

Throughout April, the GR1s followed a circuitous route from Bruggen to the FRY via France and Italy, after several central European countries refused to permit overflight by NATO aircraft involved in Allied Force. Sorties were therefore a gruelling 6½ to 7½ hours in duration and were critically dependent on AAR. In direct support of the GR1 missions, three 101 Squadron VC10s deployed to Bruggen from RAF Brize Norton. The tankers provided not only additional fuel but also in-flight co-ordination for the entire transit flight, ending at a drop-off point over the Adriatic. This allowed the GR1s to concentrate on their operational task over the Balkans. The VC10s were in turn refuelled by Tristars of 216 Squadron, which had deployed to Ancona, Italy.

Inevitably, perhaps, targeting arrangements were only perfected over time and through a certain amount of trial and error. Approved targets were passed from the CAOC to RAF

Bruggen via the Linked On-Line Centre Europe communications system – essentially a secure email network. Under American direction, GR1s were sometimes tasked against targets inappropriate to the TIALD/Paveway combination during the early stages of Operation Allied Force. On one occasion, for example, they were directed to strike a large concrete airfield apron with Paveway II, yet this target was located near others that were considered more appropriate given the weaponry available and particularly vulnerable to attack with Paveway III. In the absence of any clear statement of the air campaign's objectives at unit level, aircrew began to question whether such tasking justified the very considerable effort that their missions involved and the inherent risks of flying in hostile airspace.

The GR1 crews had been briefed to expect determined opposition from the FRY IADS and approached their target areas with a reasonable understanding of the weapons ranged against them. They were less conversant with FRY air defence doctrine and tactics at the beginning of Allied Force but quickly developed their knowledge on the basis of actual experience. The Yugoslav Air Force retained some capability throughout the operation, but their interceptors were no match for the American fighters arrayed against them, and many of their combat aircraft were destroyed on the ground.

Yet if the airborne threat was soon effectively eliminated, the same cannot be said for the FRY's ground-based air defence systems. Mission planning always exploited the latest intelligence on SAM locations. Maps were produced showing so-called 'threat rings' around the various SAM systems, and mission routes were designed to minimise flying time within each threat ring and, if possible, avoid them altogether. Nevertheless, post-war analysis demonstrated that the GR1s were 19 times more likely to observe SAM launches or AAA during an aircraft sortie than the GR7s and were also far more likely to feel sufficiently threatened to take evasive action. This was because of the longer duration of GR1 flights over hostile – particularly Serbian – territory. By contrast, the GR7 missions often required them to hold outside hostile airspace until targets became available. According to RAF Bruggen's after-action report,

FRY SAM and AAA assets tended to be very active, particularly in the Belgrade, Novi Sad, Obvra and Nis areas and, notwithstanding their relative lack of success against NATO forces, they appeared to be employed in a

highly competent, intelligent and aggressive manner. A mixture of guided and ballistic launches were employed during SAM engagements and different systems were co-employed frequently, such as near-simultaneous launches of SA-3 and SA-6. SAM launches were always accompanied by extensive AAA activity, which in turn became a factor during any subsequent 3-D defensive manoeuvring as it inevitably required the sacrifice of height to maintain energy. The ARM awareness of the SAM operators appeared high with widespread use of anti-ARM tactics such as pre-emptive radar switch-offs and frequent location changes ... which presented great difficulties in attempting to identify site locations either for targeting or avoidance.

Although some FRY SAM systems such as SA-3 were ageing former-Soviet stock, they remained extremely potent. Indeed, operated in conjunction with off-site cueing EW radars like Flat Face, the SA-3's Spoon Rest radar proved capable of detecting the supposedly stealthy American F-117 that was shot down on 27 March – an aircraft with a far smaller radar signature than the GR1. When engaged by SAMs, the GR1s followed the standard chaff and manoeuvre tactics recommended by the AWC, but the GR1's poor performance at medium altitude with an operational load sometimes necessitated the ejection of stores and a descent to lower level, where the aircraft was potentially vulnerable to further SAM launches or AAA. Moreover, the GR1's EW equipment was not optimised for medium-level flying. In such an environment, with the bombers concentrating on their targets and committed to restrictive attack profiles, the presence of accompanying spotter aircraft to provide cross cover was of crucial importance. Overall, the Bruggen pilots soon learned to treat the FRY IADS with considerable respect.

The aircraft deployed against the FRY's ground-based air defences have already been described, but RAF GR1s equipped with the Air-Launched Anti-Radiation Missile (ALARM) might also have contributed to the SEAD task. Unfortunately, early in the operation, CBFI(A) prohibited the use of ALARM, emphasising the limitations of the system, particularly against intermittent or fleeting targets. The primary SAM threats were observed to have low radar emission rates and short transmission periods; SAM systems were frequently moved and were invariably difficult to locate. By the time that Bruggen-based GR1s arrived over Serbia, pre-flight positional information on potential targets could be five hours out of date, so it was

impossible to exploit ALARM's pre-planned Target of Known Location mode. There were also broader concerns that the weapon might cause civilian casualties or collateral damage.

Although these arguments were carefully considered and fully supported by the Air Warfare Centre, they caused acute frustration among the ALARM specialists of 31 Squadron, who felt that the command chain was failing to grasp the potential for employing the missile in the Yugoslav theatre. Throughout April, they witnessed significant SAM and AAA activity and frequent employment of American HARM missiles. The number of GR1 sorties observing and avoiding surface-to-air fire is shown in the following table.

THREAT	No of GR1 sorties
AAA observed	37
SAM observed	10
Both observed	23
AAA avoidance	11
SAM avoidance	5
Both avoided	20

The Aviano E-3D Detachment

The growing scale and complexity of Allied Force presented the RAF E-3D detachment at Aviano with a gruelling task throughout much of April. To an extent they found themselves the victims of their own success. Increasingly, they were assigned to the busier southern orbit, while NATO E-3As – effectively tied to NATO bases in Southern Italy and Greece – were sent to the Bikini orbit in the north; their only northerly basing option was in Germany. The length of the transit and the E-3A's lower endurance (compared with the E-3D) often left them struggling to achieve the planned six hours on station and the E-3Ds were regularly called on to make good the deficit by extending their time in on task up to seven hours. It is thus not surprising to discover that their in-theatre flying was at a rate equivalent to 130 to 140 per cent of the factored E-3D rate. The workload born by the weapons controllers was

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said to have 'reached and sometimes exceeded saturation levels'; for the majority, uninterrupted periods of over six hours on console were the norm. On one night sortie, a single weapons controller controlled ten tankers and their refuelling 'trade' of approximately 90 fighters simultaneously on two separate frequencies. Without his efforts, a significant proportion of the planned offensive air tasking would not have been fulfilled. Although this was an extreme example, weapons controllers were regularly expected to direct between thirty and forty aircraft into battle and control their return from hostile territory. The burden imposed by the AAR control task is illustrated by the fact that, at the height of the campaign, 156 tanker sorties appeared on the ATO.

The E-3D detachment confronted a number of operational challenges during April, and solutions were not always readily forthcoming. The poor weather that affected Allied Force as a whole brought periodic rain to Aviano, where the wet runway forced the E-3Ds to take off with less than their maximum fuel load. This inevitably reduced their endurance without AAR, which was in high demand. There were also further difficulties with US-only packages, which were partially but not entirely addressed through liaison with the Americans on the ground and by flying with US personnel on board the aircraft. Beyond this, as the E-3D was procured primarily for warning and surveillance, it did not have enough radios to meet the demands of airborne command and control in large-scale high-intensity operations – a fact already well established before March 1999. The RAF therefore initiated action under Urgent Operational Requirement procedures to install three more radios into each aircraft, but there was not enough time to modify them before the ceasefire in June.

More broadly, it became clear as the month progressed that the sheer volume of tracking, reporting and controlling could not be sustained by the participating RAF and NATO E-3s. Fortunately, their numbers were in due course augmented by USAF E-3Bs and E-3Cs based at Geilenkirchen, which could also assist by operating in the northern orbit and controlling the US national packages that transited into Serbia from that direction. Additionally, measures were initiated to move the control of AAR and airlift traffic to ground agencies, and the US aircraft carrier *Theodore Roosevelt* brought further air command and control capability into theatre in the form of E-2Cs. Nevertheless, the scale of the task continued to increase as NATO's order of battle expanded inexorably. As the CBF(A) put it, 'The airspace remains very congested with worse to come as additional assets arrive in theatre.'

The Cost of Doing KEZ Business

Given the many and varied challenges confronting NATO combat aircraft over the FRY, it was essential for the alliance to maximise the tactical impact of each Allied Force mission. Against this background, the orientation of the air campaign came under increasingly critical scrutiny. To some, at least, it appeared that the campaign's focus had shifted too far towards the KEZ and was producing a very poor return in relation to the effort expended there. It was too difficult to locate legitimate targets in Kosovo; moreover, when targets were identified and attacked, their destruction did not always contribute very much to NATO's operational objectives.

The problem was graphically illustrated in a briefing prepared by the CAOC entitled 'Cost of doing KEZ business.' This document maintained that a high proportion of Allied Force sorties undertaken by multi-mission-capable aircraft took the form of CAS-type missions for which such aircraft were not optimised. This resulted in a sortie rate of 14.1 per target destroyed, which 'indicates a very lengthy period of prosecution in Kosovo to achieve acceptable levels of target reduction'. Per sortie, CAS-optimised aircraft were destroying twice as many targets as multi-mission aircraft, yet multi-mission aircraft were flying more than twice as many sorties as CAS-optimised aircraft. Generally, the extensive dispersal of FRY forces ensured that missions in the KEZ offered minimal reward. Only 51 per cent of those assigned to the KEZ were actually directed on to a target, leaving the remainder to find back-up targets that had 'little or no effect on the VJ/MUP forces in the field'.

It is important to place these criticisms in their correct context. The CAOC was implying that there was a clear choice to be made between KEZ operations and other lines of attack, such as strikes on strategic targets in Serbia, yet this was not necessarily the case. There remained strong political pressure to engage tactical targets in the KEZ – a strategy that could be presented as a direct response to ethnic cleansing and which involved only a moderate collateral damage risk. By contrast, numerous important fixed targets had still not been formally cleared, not least because the probability of collateral damage appeared to be considerably higher.

The weather factor was also influential in determining the orientation of the campaign. As we have seen, politicians were prepared to allow attacks on fielded forces in Kosovo in

overcast weather, whereas strikes on fixed targets involving precision-guided – especially laser-guided – munitions tended to become impracticable. It was not very likely that the unguided bombs would strike their targets with pinpoint accuracy, but they could be aimed accurately enough to reduce the probability of collateral damage to acceptable proportions. Finally, there was a marked tendency in both NATO and national press briefings to express the campaign's achievements in terms of effort expended rather than results achieved. Hence, it could be argued that the political perspective on Operation Allied Force was diametrically opposed to that of the CAOC, which attached more importance to effect and economy of effort.

Yet even if the CAOC's critique was politically unrealistic, it was sufficiently authoritative to cause serious misgivings in other quarters of the NATO alliance. In the UK, PJHQ passed the CAOC's assessment of KEZ operations to CAS. According to their summary,

An enormous number of sorties have been tasked in this manner – with little effect. The majority of attacks against alternate KEZ targets have been through cloud and are unlikely to have inflicted much damage ... The conclusion drawn ... is that the current policy of concentrating all effort on kill boxes is not an effective use of all the available air assets.

In turn, CAS alerted CDS. In reviewing the progress of the air campaign, he pointed out that the original phased plan had not been followed. 'Once the extent and ferocity of ethnic cleansing became apparent, SACEUR directed that the primary weight of effort was to be targeted against VJ/MUP units in Kosovo. This has detracted from operations in Serbia.' KEZ operations were, he argued, 'an inefficient use of some aircraft types ... [and] a diversion of scarce resources ... from where they are really needed'.

Quite independently, the Chief of Defence Intelligence (CDI) was presenting a very similar picture in a summary submitted to the Prime Minister through the Secretary of State for Defence. According to CDI, the air campaign had succeeded in degrading the FRY's IADS, its military capability and its ability to wage war. It had severely disrupted POL supplies and lines of communication, thereby isolating VJ and MUP forces in Kosovo and impeding troop movements elsewhere, and it had damaged the FRY communications network and hence the VJ and MUP command and control system. But it had 'not so far caused any significant

damage to the VJ/MUP on the ground in Kosovo'. Yet attacks on the VJ and MUP in the KEZ had absorbed the lion's share of NATO's offensive effort.

To these pessimistic assessments were soon added more general concerns about the strategic direction of the air campaign and particularly about SACEUR himself. The essence of the problem was vividly demonstrated at a meeting of NATO chiefs of staff on 15 April, where SACEUR declared that the air campaign was 'progressing methodically'. CDS subsequently pressed him on this point, asking him to explain the pattern of his air campaign strategy. 'It was hard to understand what were his priorities.' This was essentially a pre-arranged question agreed between the two generals over the telephone the previous day. Nevertheless, General Clark's response can only be considered singularly unconvincing and must have revealed to all those present that the air campaign's progress was anything but methodical. He stated that it was 'hard to explain an air strategy from a simple target list'. His priorities were IADS, ground forces, isolation of forces in Kosovo and higher command and control, but there were many different potential aim points within these target categories. 'The result was always a mosaic of activity, not a linear strategy.'

The assembled chiefs were left to draw their own conclusions and, in the British case, at least, they were far from positive. At a meeting of the British Chiefs of Staff on 19 April, CAS declared bluntly that 'At present, the enemy's strategic and operational centre of gravity had not been defined and there were no time-lines and no target prioritisation.' In the subsequent discussion, it was added that 'The Air Campaign up until now had not been aligned to political activity.' Moreover, SACEUR had been frustrating the targeting effort: for example, he had concentrated on POL targets while four key bridges into Kosovo had been left untouched.' The USAF took a similar view. When CAS attended a conference of Central Region air force commanders on 22 April, he sensed

a very real feeling of frustration from his US Counterpart and COMUSAFE, and also their concerns about SACEUR's conduct of operations ... It was generally considered that SACEUR's concentration of effort on fielded forces in Kosovo for the last two weeks and occasional targets described as being of "unique strategic value" had led to a most inefficient utilisation of NATO air assets.' The French felt that SACEUR 'was not explaining his strategy adequately nor defining the targets'.

Yet SACEUR's focus on the KEZ was by no means the only difficulty. The truth is that NATO's air C2 structures were also poorly prepared for the task that confronted them by April 1999. While the existing CAOC was capable of directing a limited number of air strikes against a relatively small list of pre-planned targets, it did not have the capacity to manage a much larger and more intensive air campaign against an infinitely more varied and dynamic target array that included 'time-sensitive' targets. For this purpose, a fully-fledged ACHQ was needed; it took more than a month to establish. In the meantime, several vital campaign management components remained largely absent. The RAF afterwards reported that 'clear targeting guidance was not available to targeteers until day 47 of the campaign.' Before that, production of the Joint Prioritised Integrated Target List – a normal air headquarters function – was controlled by CINCSOUTH's headquarters at Naples. Furthermore, several critical processes were neglected, particularly Strategy (Strat) and Guidance, Apportionment and Targeting (GAT). The expansion of the CAOC into an operational level ACHQ has been described as 'a case study in ad-hoc crisis management ... Across the whole range of HQ staff cells (A1-A9), augmentees were being thrown together, often without cadre personnel or identified procedures to follow.'³³

The number of personnel at Vicenza ultimately rose from 400 to more than 1,300, but virtually all the after-action reports record that the headquarters struggled to develop an efficient targeting cycle – from the identification of the target through to the air attack against it. The so-called sensor-to-shooter link was too slow. The involvement of numerous external entities, including national approval authorities and higher headquarters targeting and intelligence staffs, was partly to blame, but a lack of up-to-date BDA made matters worse. The RAF GR7 detachment soon began using their reconnaissance collection and interpretation capability to circumvent the official channels, sharing imagery directly with the American A-10 detachment also based at Gioia del Colle and collecting BDA to verify that aircraft were not being launched to attack targets that had already been destroyed.

The Strategy and Mission Statement

The second half of April witnessed several initiatives to remedy the air campaign's most obvious defects. Recognising that his front-line force was still too small, SACEUR demanded an additional 300 aircraft. This would increase the total to about 900 during May – a substantial augmentation of firepower. At the same time, the CAOC established proper Strat

and GAT machinery, and RAF personnel were appointed to certain pivotal positions in the two cells. They subsequently played an influential role in persuading the CFACC to adopt a long-term campaign strategy. This took the form of his Strategy and Mission Statement, in which he proposed to redress the balance between KEZ and other operations by focusing far more bombing effort on military and strategic targets in Serbia. Only CAS-optimised aircraft would be employed in the KEZ, multi-mission aircraft being freed for more effective use against other key target sets. The CFACC now assumed responsibility for producing the JPITL for CINCSOUTH's approval.

At the strategic level, Short's plan envisaged that the air campaign would target enemy forces in Kosovo, degrade the FRY's military capability and bring pressure to bear on Milosevic and his government. Key objectives included the isolation and destruction of VJ/MUP capability and forces in Kosovo *and* Serbia, attacks on locations of value to the FRY leadership and the maintenance of air superiority. The plan was designed to take full advantage of the extra aircraft being committed to the campaign by increasing the weight of effort devoted to strategic and military targets in Serbia while maintaining the intensity of operations against the security forces in Kosovo. In the UK, the Air Staff pinned its hopes on this twin-track or 'parallel' strategy. It was by no means perfect, for it did not address key shortcomings of the campaign to date, including the failure to identify centres of gravity and the absence of timelines and targeting priorities. Nevertheless, it seemed to represent a marked improvement and won the Air Staff's support on that basis.

The Strategy and Mission Statement secured CINCSOUTH's approval on 29 April – in accordance with NATO's formal command and control hierarchy. However, two fundamental obstacles confronted the plan's successful implementation. The first was SACEUR himself, his focus on KEZ targets and his insistence on micro-managing the air campaign instead of delegating authority to the responsible commanders. At NATO's 50th anniversary summit in Washington between 23 and 25 April, CDS and the CJCS discussed SACEUR's approach to the campaign and decided that an intermediary might profitably raise their concerns directly with him. They entrusted this unenviable task to the British CAS, Air Chief Marshal Sir Richard Johns.

CAS's brief stated that the 'ostensible reason' for seeing SACEUR (who is said to have been far from enthusiastic about the meeting) was to 'advise him on the strategic direction of an

air campaign and the associated planning', but it acknowledged that, in reality, there were plenty of people in NATO who could supply this guidance. The real issue was said to be 'SACEUR himself, and the extent to which he will allow the campaign to be planned and executed without interference or micro-management'. CAS was to emphasise the UK's desire to help SACEUR but also the need to achieve a better understanding of his strategy. In other words, what were the FRY's centres of gravity and how could they be targeted most effectively? If such issues could be clarified at the higher levels of the Allied Force command chain, SACEUR could then leave his subordinates to 'get on with the job'. CAS was also to confirm the UK's support for the CFACC's 'parallel' strategy and urge on SACEUR the need for both concentration of force and economy of effort in planning the air campaign.

At the meeting itself, SACEUR implicitly accepted General Short's Strategy and Mission Statement but left CAS with the impression that he still favoured strikes against VJ and MUP forces in Kosovo. He identified priority target categories that, in CAS's view, contained too many individual targets and so promised to disperse and dissipate the bombing effort, and he refused to accept that time-lines were necessary for the air campaign, arguing that adverse weather conditions might prevent their achievement. SACEUR subsequently appeared ready to redirect the air campaign towards strategic targets in Serbia. To the so-called QUINT chiefs of staff (from the US, UK, France, Germany and Italy), he expressed a desire to attack power-generation facilities and industries owned by Milosevic's close associates and to extend strikes on the state-run media. He also left CDS with the impression that targeting priorities were being considered more carefully than before.

Yet both London and Washington continued to question his ability to deploy NATO air forces to optimum effect, and similar doubts remained at lower alliance command levels. At a conference at Ramstein, CAS heard from a representative of the CAOC that there remained a fundamental divergence of opinion between SACEUR and the CFACC. 'SACEUR was preoccupied with KES operations. Short was far more concerned with targets in Serbia.' As late as 12 May, SACEUR issued a memorandum on strategic guidance to Admiral Ellis stating:

My highest priority is the attack of ground forces in Kosovo. All other target sets rank as lower priorities than this ... Your top priority must be to develop the [KEZ] targets and pour on the resources to the maximum extent possible.

The second problem concerned the process for obtaining target approval, which continued to grant considerable influence to individual NATO allies. The UK and France maintained targeting organisations that were completely independent of NATO. There was little disagreement between the UK and NATO over the CAOC's targeting proposals, and only a few targets were blocked from London, but France regularly voiced objections to targets otherwise acceptable to the alliance.

The difficulties involved in moving the air campaign from Phase 2 to Phase 3 have already been described, but certain allies remained unwilling to cede much control to NATO over targeting even after the compromise Phase 2 Plus was agreed. The Secretary General of NATO, Javier Solana, could theoretically approve new targets himself, but his power to do so was heavily circumscribed in practice. Phase 2 Plus failed to address a number of key targeting areas – particularly FRY television (Milosevic's most important domestic propaganda organ) and substantial parts of the military-industrial complex. And yet, when a NATO officer made an unscheduled public announcement to the effect that FRY television was a legitimate target, he caused such a furore that the alliance's chief spokesman had to deny the very next day that there were plans to target television stations directly. After this, Solana was understandably cautious about sanctioning targets on his own authority, but the alternative of referring them to the NAC for clearance inevitably took time.

French opposition to the extension of targeting emerged as a significant issue in the middle of April, coinciding exactly with the mounting critique of KEZ operations and Lieutenant General Short's proposals for striking more targets in Serbia. On the 14th, the US Secretary of Defence, William Cohen, held a secure conference call with his British, French and Italian counterparts, seeking their agreement to the introduction of Phase 3 and the withdrawal of objections to specific targets. Mr Robertson was broadly supportive, but the French defence minister, Mr Richard, emphasised France's preference 'to intensify air strikes against military targets in Kosovo' because 'they believed this would be the quickest means to achieve NATO's objectives. France would have reservations on specific targets in Belgrade and other purely economic targets because of the impact on public opinion.'

Later, there were further discussions between Washington and London on the orientation of the air campaign. President Clinton told the Prime Minister:

We would not be doing serious harm to Milosevic unless we moved on to Phase 3. We need to hit presidential facilities, the Socialist Party headquarters including their radio and TV stations, power plants etc ... But we could not do so unless President Chirac removed his blockage to extending targets.

When NATO's MC met the next day, SACEUR likewise informed the various chiefs of staff that he needed authorisation for such targets, and the Chairman of the MC (CMC), General Klaus Naumann, concluded that it was necessary to lift remaining restrictions on Phase 2 Plus target categories and to 'consider moving to Phase 3-type targets very soon'. Yet when CDS passed these conclusions to his French counterpart, General Kelche, he found him unenthusiastic. Kelche 'had problems with targets that were high-level political or economic in nature and not directly linked to Milosevic's military capability'. He avoided discussion of any specific targets but stated that 'he would have no difficulty [gaining approval for targets] provided they could be shown to be military in nature and not political.' Similarly, in response to a direct request to the QUINT defence ministers from Mr Cohen three days later, 'for SACEUR to be allowed the necessary flexibility to select targets, including economic and Milosevic's political power base', Richard was isolated but uncompromising. 'On targets, France's position remained that these must be linked to military capability.' Moreover, 'French public opinion expected political control of generic targets.'

These were complex and emotive issues. Although the Geneva Protocols prohibit military action against non-military targets, many targets in Serbia fell into the so-called 'dual use' civilian and military category. Like all their NATO counterparts, French ministers feared the domestic political repercussions of civilian casualties in the FRY, but two further considerations may have led them to emphasise the distinction between military and non-military targets with particular clarity. First, the French government was dependent for its majority on an alliance with the Communist Party, which was averse to granting much freedom of action to an American-dominated NATO command structure – at least where targeting was concerned. Second, President Chirac believed strongly – rightly as events turned out – that the Kosovo crisis could only be resolved with Russian co-operation. He was convinced that a more strategically focused air campaign, perhaps accompanied by more collateral damage, would alienate Russia and jeopardise any prospect of her involvement in diplomatic initiatives with the FRY. In conversation with the Prime Minister

on 20 April, Chirac accepted the need to broaden the range of targets but insisted that it was not useful to talk of Phase 3. 'This simply provoked Russia to no advantage.'

During the second half of April, the British and American governments wrestled to overcome France's aversion to strategic targeting, and President Chirac's agreement 'in principle' to a new Phase 2 Plus is recorded in the documents as early as 19 April. The plan included strikes on the FRY media, symbols of the regime, Milosevic's residencies and his party headquarters, economic targets necessary in terms of NATO's military aims, and lines of communication. But there was a pronounced difference between principle and practice. Hence the White House found cause to complain only a few days later about continuing constraints on targeting that had to be removed: 'Chirac needed to be persuaded to give wider authority, within agreed parameters, to the NATO commanders.'

The Prime Minister and President Clinton held further discussions about target clearance with Mr Chirac at the Washington summit, and Mr Richard afterwards reported to the Secretary of State for Defence that 'France had now given its agreement to all target categories identified by SACEUR with the exception of naval forces.' There was certainly some movement in the French position. Nevertheless, if the UK and US concluded that NATO's targeting problems were over, they were soon to be disappointed. As the RAF's Assistant Chief of Air Staff (ACAS) put it, 'When the PM or Clinton talk to Chirac, the latter says there is no problem, and this is reflected in the subsequent Diptels [diplomatic telegrams]. But when NATO tries to clear targets, they still run into difficulties.' On the same day General Shelton told CDS that 'targeting and target clearance were still not correct.'

He knew that Berger [at the White House] had spoken to Levitte [at the Quai d'Orsay], that Clinton had spoken to Chirac and that he, Shelton, had spoken to Kelche on a number of occasions, but in spite of all this they were still finding that the French were blocking ... There was still no progress on electrical power generation targets despite the fact that Shelton had faxed a full list of target details to the French last week.

CDS himself arranged a meeting with General Kelche on 29 April. He was 'prepared to take him head on, on the issue of targeting' and 'was spoiling for a fight with the French over this'. But Kelche effectively washed his hands of the issue when they met, laying the blame

entirely on Mr Chirac. He did not explain why Chirac was appearing to accept NATO's proposals in his deliberations with President Clinton and Mr Blair, only to reject them when they were later presented by NATO. CDS duly reported back to General Shelton and they agreed that little more could be done for the time being. 'The French position had moved in the right direction, albeit painfully slowly, and the present situation was acceptable if not ideal.' On 2 May, there was a particularly effective attack on Serbian power-generation and distribution facilities – targets that France had previously been reluctant to sanction. Nevertheless, President Chirac's direct involvement in the targeting process remained a serious obstacle to the intensification of strategic bombing in the FRY.

These continuing differences of opinion over the strategic orientation of the air campaign might have been less important had NATO been able to deploy all the air resources committed to Allied Force throughout May. Unfortunately, however, thick cloud cover continued to hamper operations. Conditions cleared somewhat during the second week of the month, but a sharp deterioration occurred thereafter. The long-awaited seasonal improvement only really began on the 25th. Hence, while the records confirm that the average daily sortie rate jumped considerably during the second month of the operation, the increase did not match expectations. During the first 40 days of the campaign, NATO flew an average of 385 sorties per day; this figure rose to 501 per day between 3 and 24 May. Yet the alliance had some 800 aircraft available for operations by mid-May. The corresponding rise in the daily rate of *attack* sorties from 101 to 147, although impressive, also failed to realise NATO's projections:

	Total Sorties	Average Daily Sorties	Offensive Sorties	Average Daily Offensive Sorties
24 Mar – 3 May 99	15,394	385	4,036	100.9
3 – 24 May 99	10,529	501	3,077	146.6

This left little scope for more intensive strategic bombing against Serbia without a marked reduction in the proportion of effort expended on the KEZ, but SACEUR's preference for KEZ operations and continuing difficulties over target clearance ensured that no such reduction occurred. Additionally, on 7 May, NATO bombs mistakenly destroyed the Chinese

embassy in Belgrade. While there is no clear evidence in the official RAF records that attacks against Serbian targets were deliberately scaled down in the aftermath of this tragic and acutely embarrassing blunder, it can hardly have encouraged SACEUR to redirect the air campaign along the lines recommended by Lieutenant General Short. Short later recalled that a 'circle' was afterwards 'drawn around downtown Belgrade' within which air strikes were prohibited.³⁴

The Harrier GR7 Detachment in May

For the RAF Harrier GR7 detachment the pattern of operations changed somewhat at the end of April. On the 26th, they sought clearance at short notice to drop unguided 1,000lb bombs through cloud on to a SAM site, but it proved impossible to obtain the Secretary of State's approval in the time available (54 minutes). Consequently, the GR7s were restricted to the use of Paveway II. The aircraft involved flew all the way to their target area, but poor weather prevented the release of any weapons and they returned to base. The post-mission report recommended that the Secretary of State delegate responsibility for approving attacks through cloud with unguided weapons to the CBF(A). The impact was decisive. On the 30th, this targeting delegation was formally requested, and Mr Robertson signified his approval five days later provided that the assessed risk of collateral damage was no higher than medium³⁵ and the risk of civilian casualties was low.³⁶ At about the same time, the GR7s were at last authorised to carry mixed weapon loads consisting of RBL755 and 1,000lb bombs, and they regularly flew with both weapons for the remainder of Allied Force. The detachment was also enlarged to sixteen aircraft during the first week of May.

KEZ operations continued to account for the vast majority of GR7 sorties and were planned daily throughout May; all missions between 1 and 10 June, when Allied Force was suspended, were similarly flown in the KEZ. Assembly Area attacks resumed, but whereas, during April, the GR7s only mounted area strikes when they were unable to bomb primary or alternate targets, they were specifically tasked against several Assembly Areas in the first half of May. By the later stages of Operation Allied Force, area targets were subject to an exhaustive clearance procedure designed to ensure that legitimate targets were present and that there were no civilians in the immediate vicinity. The system was described by the Deputy CBF(A) as follows:

- a) Task Force Hawk (TFH)³⁷ get a tip from the UCK³⁸ and back it up with their own visual recce (from helicopters flying near the border), ELINT using ground-based and airborne platforms and other US-only intelligence information available to them. This is a multi-source assessment.
- b) TFH conduct an IDP/Friendlies assessment, collateral assessment and military utility assessment before passing the detailed information to JAC Molesworth.³⁹
- c) JAC Molesworth run a check on the TFH assessment and fuse it with their own intelligence from a variety of sources. This will include imagery from various platforms and SIGINT. This is a second multi-source assessment and while verifying the TFH analysis also looks at collateral damage considerations.
- d) JAC Molesworth pass the target information down to the CAOC, who run a final quality control check using SIGINT, U2 radar imagery and near real-time UAV⁴⁰ coverage. This is a third multi-source assessment which also looks at IDP and collateral damage considerations.
- e) Once all of the above hoops have been jumped through, the CFACC clears the target for non-precision attack, even through cloud.

However, after 13 May the mission records no longer list Assembly Areas as primary targets for the GR7s. According to the detachment diary, there were concerns regarding the rate of weapons expenditure involved in area attacks, particularly when the military results of releasing bombs through cloud were so uncertain. British aircrew also remained bound by the stipulation that an Assembly Area could only be bombed if a specific target could be identified and marked within it by the attacking aircraft or the AFAC. This task was difficult to achieve under any circumstances from altitudes of 15,000-20,000ft, especially when potential targets were camouflaged or located in dense woodland. It was virtually impossible in overcast weather conditions, and such conditions prevailed throughout the second fortnight in May. Many missions were cancelled before take-off when it became obvious that the necessary criteria for attack would not be satisfied. On 7 May, the 5 ATAF Current

Operations Chief at the CAOC acknowledged that a variety of national restrictions prevented particular NATO members from effecting 'drops through the weather' on to Assembly Areas and confirmed that the CAOC would cancel missions that could not drop through cloud when that was known to be the only option for the day.

During May, the GR7s successfully released LGBs on to targets at some 18 locations. Of these attacks, 12 occurred during a single week – between the 9th and the 15th – when the weather was particularly good. On the 9th, GR7s bombed a petrol production and storage facility at Pristina with a combination of LGBs and free-fall 1,000lb bombs. Their targets consisted of an array of buried POL tanks. An unserviceability forced one of the LGB aircraft to return to base, but the other managed to destroy one of the tanks, and two more were destroyed by free-fall bombs. On the 11th, GR7s released several Paveway IIs on to an ordnance repair facility near Cacak. During the next few days, they struck a number of bridges, including the Milosevo highway bridge over the River Lab in Serbia on the 12th. From pre-strike reconnaissance imagery, it appeared that the target might be difficult to acquire, so they used co-operative laser designation. However, after the first 'bomber' missed the bridge, the designating aircraft executed a successful self-designating attack with Paveway II. The second co-operative attack was also successful, and two of the bridge's four spans were left in ruins.

Two GR7s designating for each other demolished another road bridge near the town of Orlate on the 13th, and there were also successful strikes against the Grdelica railway bridge over the Juzna Morava river and the Popovac highway bridge between Nis and Belgrade on the 14th, and the Kursumilija and Kosmaca highway bridges over the River Toplica in Northern Kosovo on the 15th. Other targets bombed in the same period included a petrol production and storage site at Pozega on 11 May, installations at Pristina airfield on 13 May, and an army barracks at Krusevac on 14 May.

Only five successful missions were mounted with LGBs after 15 May, partly because of poor weather and partly because priority was allocated to KEZ operations. On the 17th, the GR7s targeted the Tomance highway bridge over the River Ovreka. Cloud cover at first prevented them from executing the task, but two aircraft were subsequently refuelled in the air and given a second time-over-target. Although they had still to revise their planned line of attack to avoid cloud obscuration, they destroyed the bridge. On the 21st, three separate missions

struck border posts along the frontier between Serbia and Albania. The final GR7 LGB mission of Operation Allied Force, on 31 May, involved an attack on the Titovo Uzice storage depot in Western Serbia employing co-operatively designated Paveway IIs. The first pair of bombs hit their aiming points, but the other two fell 200 metres short of the target, apparently because of a laser power malfunction.

Throughout Allied Force, the greatest care was taken to fulfil the requirements of the UK TD. A few targeting proposals were rejected at the highest level: by 8 May, five targets allocated to the GR7s had been vetoed from London since the beginning of the operation. The British authorities prohibited GR7 strikes on a television transmitter at Kapaonik because its use was considered to be entirely civilian, and an ammunition storage facility at Novi Pazar because it was identified as a storage site for bacteriological warfare shells. The rejection of a POL storage area on the outskirts of Bogatovac reflected concerns over collateral damage if unguided bombs were used, but the target was later cleared for attack with precision-guided weapons. Finally, two Assembly Area attacks on 'cleansed' Kosovo Albanian villages were blocked because only one intelligence source could confirm that there were no longer any refugees at the locations concerned. The TD incorporated explicit instructions from SACEUR that at least two sources of intelligence were required.

All targets allocated to RAF aircraft were scrutinised in theatre prior to authorisation or submission to higher authority for approval. On a small number of occasions, the CBF1(A) had reason to use his so-called 'red card' – his power to reject particular targets selected for the RAF by the CAOC. These tended to be secondary targets that had already been bombed. Such decisions were taken in consultation with his legal adviser, an officer of Wing Commander rank located at Vicenza, who examined all targets assigned to the GR7s and GR1s. On 17 April, for example, the GR7s were allocated seven specific aiming points at the Urosevac army barracks as an alternative target in the KEZ, but BDA imagery was subsequently received showing that all had previously been hit and that the targeted facilities had been destroyed or significantly damaged. The legal adviser therefore pointed out that that the proposed attack would be unlawful because it would involve the inappropriate and disproportionate use of military force. Moreover, it offered no definite military advantage. The CBF1(A) then immediately informed Lieutenant General Short that he could not approve the target. Diplomatically, he did not explicitly question the legality of the task but

emphasised instead his unwillingness to place attacking aircraft at unnecessary risk for little or no military gain. Both Short and Admiral Ellis agreed with his judgement.

Inevitably, though, a considerable burden of responsibility for observing the requirements of the TD devolved on to the GR7 pilots. While they were meticulously careful to avoid inflicting civilian or friendly casualties or collateral damage, the large-scale flight of Kosovo Albanians to neighbouring countries increased the difficulty of distinguishing between military convoys, which were valid targets, and those containing civilian vehicles, which were not. On 14 April, an airborne command and control aircraft (call sign MOONBEAM) informed two GR7s of a large convoy of around 100 vehicles east of Djakovica; MOONBEAM had sought approval from the CAOC to task offensive aircraft against it. Having identified the convoy, the GR7 pilots observed it through their gyro-stabilised binoculars. One of them, an American exchange officer, subsequently recorded:

It was about 1.5 nm long and tightly packed. I flew directly over it and noticed colours, reds and yellows, in the column of vehicles. I immediately thought that these were not military vehicles, or that it was a set-up by the Serbs.

A second overflight confirmed his impression that the convoy comprised both military and civilian vehicles, and he therefore warned other NATO aircraft in the area not to attack it. His action (wrongly attributed by NATO to the pilot of an AO-10 observer aircraft) prevented two F-16s from targeting the convoy and may have saved hundreds of Kosovo Albanian lives. On the same day, NATO aircraft struck two other convoys containing civilian vehicles in the Djakovica area, and some 70 refugees were killed. A very similar incident occurred on 21 May, when another GR7 pilot decided that a convoy approved by the CAOC for attack required further investigation. Again, he identified civilian vehicles in the column and warned off the rest of his formation. 'Shortly afterwards, the target clearance from the CAOC was withdrawn.'

Civilian lives were saved on these occasions only because the GR7 pilots exercised scrupulous vigilance and caution, but there were limits even to their ability to ensure that all targets were legitimate. The three attacks on Kosovo-Albania border posts on 21 May included a strike at Glava, which was cleared in the usual way by the CBF1(A) following confirmation that no refugees were in the target area. The four aircraft tasked against the

border post also made a pre-strike reconnaissance of the target to ensure that it was clear of non-military activity before completing the attack. Regrettably, it transpired afterwards that the border post had been occupied by members of the KLA, some of whom died in the raid.

Although the FRY retained a significant ground-based air defence (GBAD) capability throughout Operation Allied Force, it was heavily concentrated in Serbia, whereas most GR7 sorties were flown over Kosovo. Very few GR7 sorties (3 per cent) reported a direct threat from SAMs or AAA. In all, 14 mission reports recorded AAA, while only seven noted SAM launches and one mentioned both. Three crews felt sufficiently threatened to take evasive action. One of the few GR7 missions to encounter significant SAM activity was the 11 May strike on the ordnance repair depot at Cacak. On that occasion, all four members of the formation saw missile launches heading towards them from Ponikve airfield and broke towards the smoke trails. Then they called in a SEAD package, which released HARM missiles against at least two ground targets. One GR7 pilot saw two suspected MANPAD launches and watched the missile trails until they petered out at an altitude of approximately 10,000ft. All the crews received SAM-6 indications on their RWRs, and a hostile radar actually locked on to one aircraft, which was forced to execute evasive manoeuvres.

Tornado GR1 Operations in May

At RAF Bruggen, there were high hopes that many more Tornado GR1 sorties would be completed successfully in May than April. Clearer weather was expected, and overflight clearance from the Czech and Slovak Republics and Hungary promised to reduce sortie durations to around 4½ hours – a marked improvement. These two considerations – better weather, reduced transit time – largely underpinned the decision to continue operations from Bruggen rather than deploy the GR1s forward. Yet disappointment was to follow. Although four more GR1s were committed to Allied Force, bringing the total to twelve, only eleven missions actually released weapons against their assigned targets compared with eight in April, and one of these, on 15 May, probably should not have done so. All bombs dropped on that date missed their aiming points because of cloud in the target area. In other words, the weather allowed only two more successful GR1 missions to be flown in the second month of Allied Force than the first.

Once it was certain that the required flying rate was impossible to achieve from Bruggen, CJO decided to deploy a GR1 detachment to the French Air Force base at Solenzara, Corsica, so that sorties could be mounted more intensively from an airfield much closer to the target area. 9(B) Squadron crews then began work-up training for the Solenzara deployment with the particular aim of improving their medium-level TIALD/Paveway capability.

Meanwhile, 14 Squadron remained at the forefront of the operation, while 31 Squadron was tasked to provide an operational team for the Bruggen wing *and* six crews for Solenzara. However, the Bruggen missions only continued through an organisational, logistical and operational effort that must sometimes have seemed disproportionate in relation to the tactical results achieved – particularly where the non-TIALD specialists of 31 Squadron were concerned. The squadron flew six missions on Allied Force during the month. The first, on 2 May, was nearing its target area when it was cancelled due to poor weather, and all aircraft returned to Bruggen without releasing their weapons; it was the same story on the 14th. On 12 May, the GR1s actually attacked their target, but only one out of eight Paveway IIs hit its aiming point. On the 20th, six GR1s equipped with Paveway II set out to bomb storage buildings at the Milicija depot, Belgrade. One aircraft became unserviceable before take-off, leaving five to complete the mission. Of these, two scored direct hits, but they encountered determined opposition in the form of SA-3 and SA-6 launches. Although unguided, the missiles were aimed with considerable accuracy, and the threat was deemed sufficiently high for the other two bombers to cancel their attacks.

Of six aircraft (four bombers and two spotters) to take off on the 21st, only one succeeded in hitting an allocated aiming point, while two bombers returned to Bruggen with unserviceable equipment and one missed its target. The final mission from Bruggen to involve 31 Squadron was flown against an ammunition depot at Ralja and against the Velika Plana bridge on 26 May. The GR1s were confronted by particularly intense SAM and AAA fire, and their ECM equipment confirmed that some of the SA-3s were guided. All aircraft were forced to take evasive action, five dumping their auxiliary fuel tanks and one jettisoning its weapons. Two of the bombers abandoned their attacks, but one Paveway II hit the storage depot and a Paveway III was dropped on the bridge. In summary, of the 48 LGBs that should theoretically have been conveyed to the FRY by 31 Squadron GR1s during these

missions, only nine were accurately released onto their allocated or alternative aiming points.

May also started badly for 14 Squadron. On the first day of the month, two of the bombers missed their targets,⁴¹ while the other two did not release weapons because their designated aiming points were obscured by cloud, and there were two more unsuccessful missions – on the 10th and the 15th. Fortunately, the other five missions flown by the squadron in May achieved more satisfactory results. On the 3rd, their target was Obrva airfield. During the attack run, an SA-3 fired its missiles at the GR1 formation – the first occasion that Bruggen aircraft had been directly targeted by the FRY's defences. The crews responded with aggressive three-dimensional manoeuvres and employed chaff, evading the missiles and hitting all their targets at the same time. American F-16s also became involved, firing four HARMs at the SA-3 Low Blow radars.

On 25 May, four aircraft attacked a presidential retreat and Batanjnica airfield. Although the strike on the presidential site was a failure, one of the Paveway IIIs dropped on the airfield landed immediately alongside its target, and the other scored a direct hit. On the following night, four GR1s were tasked against an ammunition storage area at Ralja and two released their weapons successfully. During the attack, several SA-6s were launched against them. The missiles were successfully evaded, but the GR1s again flew with two spotters on the final mission (28 May), as well as three extra bombers. Two of the bombers returned to Bruggen with unserviceabilities before reaching the FRY, but the remaining seven aircraft all succeeded in hitting their targets. Overall, throughout May, the 14 Squadron GR1s released 46 bombs, 27 of which struck their aiming points. A further three bombs fell sufficiently close to their targets to cause significant damage.

Renewed pressure from RAF Bruggen and the increased threat from FRY SAMs during May eventually led to the removal of some restrictions on the employment of ALARM. Nevertheless, its use remained subject to a number of constraints. ALARM could only be launched when crews possessed real-time intelligence on the location of SAM sites and when there was minimal risk of collateral damage. In practice, these requirements proved extremely difficult to satisfy because of a combination of effective anti-ARM tactics by the FRY SAM operators and a lack of sufficiently recent and accurate data on SAM locations. Two ALARMS were released on 21 May, one exploding near an active SA-3 site, but the

aircraft that came under sustained attack on the 26th were not equipped with ALARM because there was no prior knowledge of the location of the SA-3 and (mobile) SA-6 systems involved. Understandably, from the aircrews' perspective, it seemed that lives were being placed at unnecessary risk by restrictive ROE designed largely to satisfy political concerns over the avoidance of collateral damage. Shortly afterwards, on the recommendation of CBFI(A), the restrictions were further relaxed: crews were authorised to use ALARM in all five of its operating modes, including the Loiter and Area Suppression modes, to allow so-called Corridor Suppression.⁴²

While operations from Bruggen continued, preparations began for the Solenzara deployment. The plan was to position 12 aircraft at the base drawn from 9(B) Squadron (which also provided engineering support) and 31 Squadron and achieve operational status by 1 June. RAF Bruggen would then be removed from the Allied Force command chain, the Solenzara detachment being placed under the CBFI(A), who reported directly to PJHQ.

On 13 May, an activation party predominantly consisting of HQ 1 Group personnel deployed to Solenzara. A team of Royal Engineers soon followed, tasked with improving the base infrastructure, and elements of the Tactical Communications Wing arrived to establish a range of secure voice, data and satellite data services. The deployment also benefited from extensive host-nation support provided by the French Air Force. By the 22nd, the Detachment Commander could produce an upbeat assessment of progress at the airfield. Arrangements for domestic accommodation, explosive weapons storage and armed aircraft parking had yet to be completed, but the Solenzara detachment was on course to become operational as planned. An advance party flew in from Bruggen on the 25th followed by six aircraft on the 29th and a further six on the 31st.

By 1 June, therefore, the GR1s were poised to mount 12 sorties per day from Solenzara in two waves of six aircraft. They could also generate a surge capability of 18 sorties, employing 12 aircraft and 18 crews. While operations from Bruggen had been restricted to the hours of darkness, the Solenzara detachment was expected to fly night and day. As five TIALD pods were available, one aircraft in each formation of six would again function as a spotter, and the Ancona-based VC-10s would provide AAR before and after bombing.

The E-3D Detachment in May

During the first week of May, the revision of airspace management procedures eased the burden on the E-3D detachment to a limited extent. On the 4th, a 23 Squadron crew was operating in the southern orbit. Their aircraft had been positioned at its combat ceiling – an altitude beyond the reach of most of the other E-3s – to maximise radar coverage, and it was this factor that allowed them to detect the take-off of another MiG 29 from Batajnica, deep in Serbia. The aircraft was at first invisible to the E-3s in the central and northern orbits. After clearing all friendly aircraft from the area, the E-3D crew vectored a formation of F-16CJs on to an intercept course and they quickly gained radar contact with the MiG. Nevertheless, the beyond-visual-range ROE criteria were not fully satisfied, and it was therefore necessary to obtain engagement authority from the CAOC, which was supplied with less than ten seconds remaining before the F-16s' fuel state compelled them to withdraw. They subsequently discharged two AIM-120 AMRAAMs and destroyed a Serb fighter that had launched to attempt an intercept of its own.

The assumption of AAR and air transport control responsibilities by ground-based agencies was followed on 7 May by a revised tasking directive that assigned USAF E-3Bs to the southern orbit and reduced E-3D flying in the south to one sortie per day, the other being flown in the central orbit. A third crew maintained ground alert each morning. On the 20th, an eighth E-3D crew became available. Yet the Aviano detachment had still to contend with an exceptionally heavy operational workload, and the basic air C2 task was complicated by frequent weather-related changes to the flying programme. Moreover, the alert aircraft was scrambled on 12, 17, 18, 21 and 23 May. It is worth considering that the detachment flew three very demanding sorties on each of these days with only three aircraft and four crews at Aviano and with only seven or eight crews in the total.

After two air-miss incidents provided further evidence of the risks inherent in flying very large numbers of aircraft into a limited geographical area, a conference at Aviano brought together representatives from several fast jet and E3 detachments and the CAOC; the fast jet community emerged with a far better understanding of the challenges confronting the E-3 crews. Nevertheless, common sense did not always prevail. The 21 May scramble was necessitated by an aborted US E-3 sortie in the northern 'Bikini' orbit. Once again, flight safety was compromised because the RAF E-3D crew did not have access to the full US

ATO, and they were even told not to track US assets in Serbian airspace. Although completely at odds with all accepted procedure and the extant Special Instructions, this bizarre stipulation is said to have been approved by the CAOC.

A Strategic Air Campaign?

The air campaign's results by the beginning of May were by no means unimpressive. CDI's regular campaign analysis noted on the 10th.

- a) The Air Campaign has achieved ... (a) damage to, and suppression of, the FRY Integrated Air Defence System, functional destruction of FRY oil refining capability and moderate damage to fuel storage capacity, disruption of lines of communication and the continuing isolation of the VJ in Kosovo.
- b) Civil and military communications networks have been disrupted. The civil system is under severe strain in an effort to cope with increased demand over a reduced capacity.
- c) The civil and military infrastructure supporting the VJ/MUP has also been attacked and significantly damaged.
- d) The VJ and the MUP, though they have yet to suffer significant casualties, are finding it harder to operate as the progressive route denial affects resupply.

The battle damage inflicted on the FRY encompassed 85 combat and other military aircraft, including around a quarter of the MiG-29 and MiG-21 fleets and 10 strategic-level SAM radar systems (24 per cent of the total); 9 of 17 militarily important airfields had been damaged, some severely, both the FRY's oil refineries had been functionally destroyed, and many fuel storage facilities had also been destroyed or severely damaged along with 35 road or rail bridges. The rail lines and high-capacity road routes into Kosovo had been cut and some 48 out of 145 fixed communications sites had been attacked, including 95 per cent of the 19 key military sites between Belgrade and Southern Serbia. Military infrastructure – barracks, ammunition storage sites – had repeatedly been targeted with success, and CDI assessed that the military capability of the VJ and MUP in Kosovo was gradually being weakened.

This relentless and intensifying bombardment, which was accompanied by a range of economic sanctions, inevitably began to undermine the resolve of the FRY's political and military leadership. NATO governments may have gambled unsuccessfully on Milosevic's will to fight at the beginning of the operation, but it is probably also true to say that he gambled on NATO's, mistakenly believing that the alliance would prove insufficiently determined and cohesive to sustain a protracted campaign. And yet, if anything, NATO appeared more united and robust in its support for Operation Allied Force after more than a month of hostilities than it had been in March. Moreover, the air campaign was inflicting increasingly severe damage on the FRY armed forces, infrastructure and economy, and hardly any of the attacking NATO aircraft had been shot down. Milosevic and his government were almost completely isolated in the international arena and were confronted by overwhelming military odds. Such a situation could not have been endured indefinitely.

The first clear evidence that the air campaign was causing serious alarm at the highest governmental and military levels in the FRY appeared at the beginning of May, when there was a sudden and pronounced increase in Serbian GBAD activity. 'There has been a more aggressive response to NATO air attacks in the last 48 hours,' CDI's campaign analysis recorded on the 4th. 'The earlier average of 10-12 firings per night had, in the last two days, increased to 50 firings per night.' The reasons were soon identified. The FRY Air Force (responsible for GBAD) had been severely reprimanded by the VJ and MUP for its failure to protect ground forces in Kosovo and for the relative impunity with which NATO aircraft were flying in the main theatre of operations. On 6 May, a ministerial meeting in London heard intelligence suggesting 'a step change downwards in Yugoslav morale'.

Soon afterwards, on the 10th, Belgrade announced a partial withdrawal of troops from Kosovo. Although no pull-back actually occurred, the announcement was transparently designed to halt (or at least pause) the air campaign and was interpreted by NATO as a clear sign of weakness. During the following week, reports reached NATO of anti-war and anti-conscription demonstrations in several Serbian towns, of declining morale and some desertions among fielded forces in Kosovo, and of acute difficulties in the recruitment of additional troops. Opposition leaders and some local dignitaries became more vocal in their criticism of the war. President Djukanovic of Montenegro described a similar situation when he met the Secretary of State for Defence at this time: 'Milosevic was cracking.'

Despite many claims to the contrary, then, NATO was making progress. Yet achievements still failed to match expectations and continued to disappoint some senior NATO airmen, who believed that far more might be possible if resources were employed more effectively. A briefing document prepared by Lieutenant General Short's staff on 22 May recorded that, notwithstanding the approved Strategy and Mission Statement, SACEUR's guidance remained focused on Kosovo.

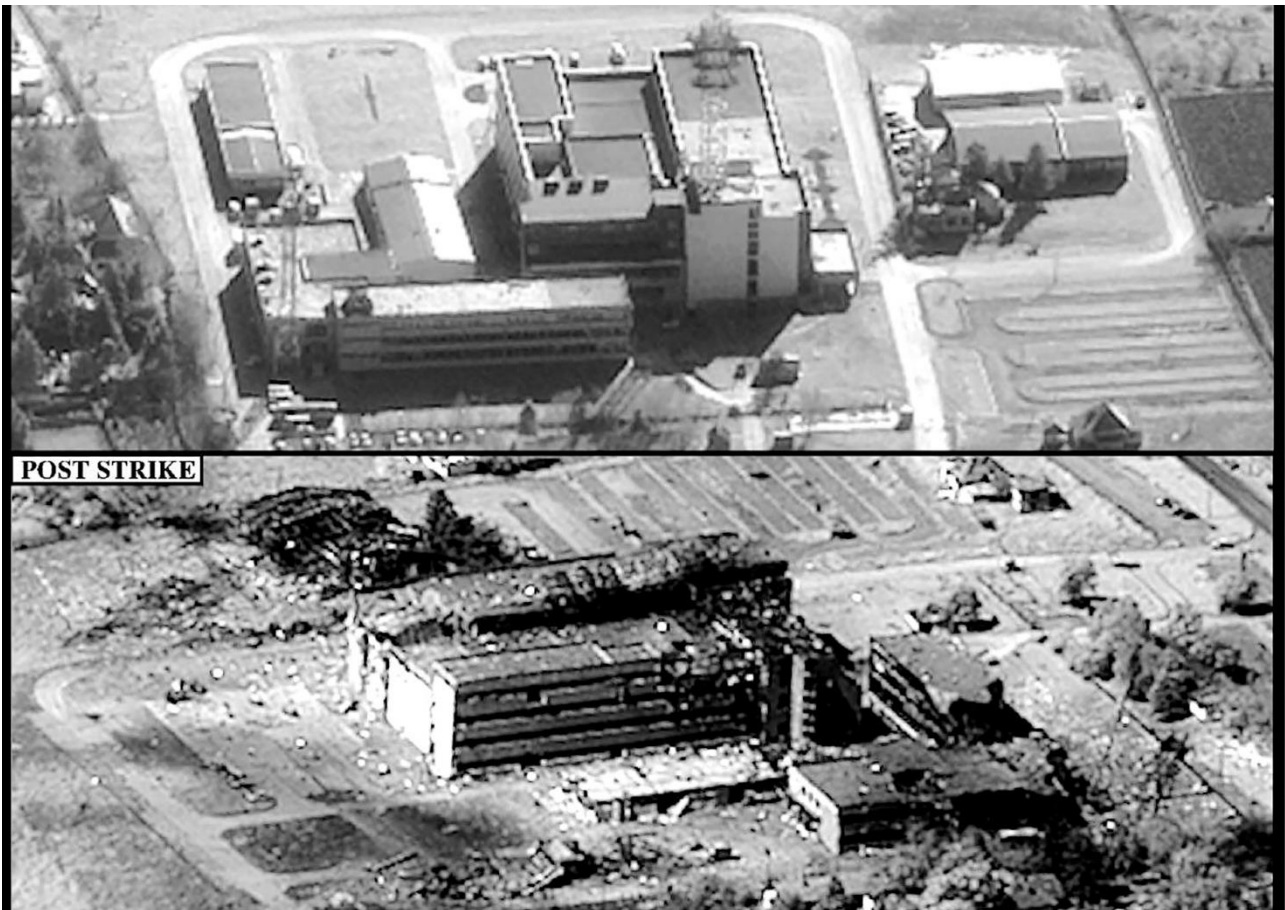
COMJTF's⁴³ apportionment for the first phase of the [revised] strategy directed that 15-30% of offensive effort be assigned to degrading VJ/MUP forces in Kosovo. However, following the strategy's implementation on 2 May 99, allocation of sorties to KEZ CAS did not change and has remained relatively constant at 40-50% of offensive potential.

The confirmed 'kill' rate inflicted on VJ and MUP tanks, armoured personnel carriers, artillery and trucks in Kosovo had increased in the second month of the campaign but still only amounted to an average of just 6.6 pieces per day and was not expected to rise further.

The brief then reiterated the arguments that the CAOC had presented in April.

In terms of 'hard kills' against VJ/MUP capability in Kosovo, the return from KEZ ops is demonstrably poor for the significant levels of effort that have, and continue to be, expended. To date, nearly 60% of ALLIED FORCE's offensive effort has been expended in this inefficient application of air power in Kosovo ... The capability of VJ and MUP forces to engage in combat operations against Kosovars or NATO ... remains substantially intact. While valuable military and police facilities have been damaged, VJ/MUP casualties to date have been light and little combat equipment has been destroyed.

Accordingly, another two months would be required to prevent the VJ and MUP from conducting offensive operations in Kosovo, and a further four months of bombing would be needed to prepare the Kosovo battlespace for an opposed ground campaign by NATO (in the event of such a strategy being adopted). It would therefore be impossible to launch a ground offensive before the onset of winter at the end of September.



NATO BDA imagery of the Novi Sad radio relay and TV-FM broadcast station, Serbia.



Post-strike imagery of another NATO target, a POL facility in Nis, Serbia.



Pre-strike and post-strike photographs of a radar facility near Pristina, Kosovo; two dishes visible before the attack were completely destroyed.



Destroyed SAM support buildings at Batjnica airfield, Serbia.

The AOC-in-C STC, Air Chief Marshal Sir Peter Squire, met with Lieutenant General Short at about this time, and afterwards reported that Short's 'remarks throughout were forthright

and revealed an enormous degree of frustration and some anger'. He denied that air power had ever been given a chance to prove itself during Operation Allied Force and complained that NATO had no conviction and no strategic plan. In his opinion, there should not have been any restriction on the use of air power from the first night of the operation; it should have been employed in an overwhelming manner to destroy Milosevic's centres of gravity. Short subsequently 'described in graphic detail SACEUR's fixation on attacking fielded forces but without a strategy'. The air campaign had been little more than a normal flying programme in which targets were chosen at random and not according to a deliberate plan. However, in proposing to Squire that General Clark should threaten resignation if the NAC refused to endorse an unrestricted bombing campaign, Short also now implicitly acknowledged that SACEUR was himself responding to political pressures over which he had little or no influence.

Many of Short's opinions were undoubtedly justified, if politically unrealistic. Assuming the CAOC's statistics were accurate, KEZ operations continued to represent an extremely slow and uneconomic means of prosecuting the air campaign. Yet the campaign was showing some limited signs of success. At a meeting with SACEUR on 22 May, Short used precisely this point to maximum advantage. He argued that, while some marginal tactical benefit was being attained from KEZ missions, these limited gains did not warrant the level of effort expended; moreover, there was no evidence that KEZ operations were producing any coercive effect on the FRY leadership. However, as there were signs that Milosevic was coming under pressure and criticism in Serbia, other lines of attack were clearly exerting some coercive impact, and these should be intensified. Short then proposed what was described as a 'new' course of action; in reality, it was merely a second rendition of the 'parallel' strategy proposed in April.

An air campaign will be conducted using parallel attacks against Serbian fielded forces and military industries. Attacks on Serbian arms manufacturing capabilities will be closely co-ordinated with information operations to alienate loyalty, support and confidence among Milosevic's inner-circle of supporters.

At long last SACEUR now accepted that some such reorientation of effort was necessary. During the following days, he discussed Short's proposals with Washington before presenting them, on 25 May, to the QUINT chiefs of staff. According to the record, SACEUR

'wished to attack targets that were part of Serbia's industrial base, those that were "leadership sustaining", the electrical power grid, lines of communication, leadership and media targets'. He then provided a long list of examples, all of which were potentially open to objection on political grounds or because they involved a high risk of collateral damage, and asked the assembled chiefs for their support in persuading the rest of NATO to accept his proposals. Finally, he delivered an uncompromising message from US Secretary of Defence Cohen:

The US wanted these targets bombed and needed support. NATO needed to announce that there was going to be greater collateral damage, but stress that this was in order to avoid a ground campaign.

Broadly, the American aim was to bring Operation Allied Force to a successful conclusion more rapidly through the application of strategic air power. The intensified strategic campaign would also help to fend off British pressure to prepare for an opposed ground offensive (see below). Collateral damage was an unfortunate but inevitable consequence, which would have to be accepted. France and Germany held similar views on the undesirability of a ground campaign, but they were averse to intensified strategic bombing at the same time, especially if more collateral damage was involved. Instead they hoped that victory might be achieved by combining NATO's existing air strategy with diplomatic pressure. The British, by contrast, doubted that air power could exert enough leverage on the FRY and believed that a joint air and ground campaign would be necessary if NATO's objectives were to be achieved.

Hence SACEUR found that neither Kelche nor General Von Kirchbach (Germany's Chief of Defence Staff) nor CDS were prepared to pledge immediate support for his proposals. General Clark reiterated his position on 28 May with the backing of the CJCS, presenting the other chiefs with four categories of target based on relationships between military importance and collateral damage risk, but Kelche and Von Kirchbach remained sceptical, and CDS said that the UK needed more time to clear targets with the Attorney General.

Ground Options

NATO launched Operation Allied Force to coerce Milosevic and his government into withdrawing their security forces from Kosovo and accepting a settlement on the lines of the Rambouillet Accords. Judged by any standards, this was a high-risk strategy. Success, if it came at all, was expected within a few days. If the campaign was unsuccessful, FRY operations against the Kosovo Albanians seemed certain to intensify – an eventuality for which only the most limited contingency plans existed. Most NATO governments apparently expected that the air campaign could be redirected against the FRY's security forces to protect the Kosovo Albanians, but senior British airmen doubted that air power could fulfil this task independently. On 31 March, ACAS wrote to PUS about the strategic options for Kosovo.

It seems to me that we can only achieve ... the removal of Serb security forces from Kosovo by coercing Milosevic or, failing that, by forcibly evicting the Serbs (which may well involve having to defeat them on the ground). Coercion offers the quickest (although not necessarily a quick) solution, but it might not work, and we have to be prepared for the slower and more dangerous option of forcibly evicting the Serbs.

Writing to CDS early in April, CAS likewise expressed the opinion that a combination of air and ground force would represent the correct 'force mix' for Kosovo and regretted the 'political decision ... not to invade with land forces'. The ACOS J3 at PJHQ – an RAF air commodore – made the same point in more forthright terms when he advised CAS on the 19th:

We need to accept that we are going to have to put a ground force into Kosovo, and this could be (or is likely to be) in a non-permissive environment ... We need an air campaign which shapes the battlefield for the ground insertion ... We need a joined-up air campaign to support the land battle.

The RAF high command retained this outlook throughout Operation Allied Force. On 6 May, ACAS advised CDS, 'Our view remains that we should be thinking (and talking) in terms of a joint campaign, not separate air and (possibly) ground campaigns.'

With the RAF assessing the independent capacity of air power in such cautious terms, it is hardly surprising that British politicians quickly lost faith in Allied Force's potential to secure the international community's strategic objectives and became the foremost advocates of a ground campaign. Yet the UK position in this respect was by no means entirely based on a straightforward search for alternative strategic options. At stake appeared to be the very future of NATO, for so long the bedrock of British defence and security policy. Historically, circumstances have cast the UK in a unique role within NATO – a role of both bridge and broker between North America and Europe. It was thus, perhaps, inevitable that the British government should have examined the implications of Allied Force's failure more urgently than its counterparts elsewhere, and it is also hardly surprising that the UK's most enthusiastic supporter should have been NATO itself. This is not to imply that NATO was any less important to other members of the alliance. On the contrary, the view that NATO must win in Kosovo was unanimously shared. It merely explains why the UK was more readily prepared to accept the political risks inherent in an opposed ground campaign than her allies, particularly the United States, who preferred to give independent air operations more time.

The origins of the British stance may be found in 'the Prime Minister's growing frustration at the lack of success of the air campaign', noted as early as 30 March, and in the advice he subsequently received on alternative strategies. On 3 April, the Secretary of State for Defence wrote to the Prime Minister, arguing that, while air operations could achieve NATO's strategic objective, preparations should be made for other options, including ground intervention. A few days later, he recommended continuing with the air campaign but reinforcing existing ground forces in theatre simultaneously. In time, these forces might be enlarged into a ground formation capable of mounting an opposed entry into Kosovo – a fact that would not be lost on Milosevic. On the 7th, the Foreign Office agreed with this approach, arguing that it would provide better prospects for managing public opinion on the issue of a ground operation than any direct move towards creating a force for an opposed entry. Nevertheless, the UK should not underestimate the difficulty of securing broad alliance support for a ground option and might have to consider a 'coalition of the willing'.

At the same time, the CMC, General Naumann, briefed NATO Permanent Representatives on opposed ground options, acknowledging the risks involved but still recommending a force of four to six divisions. The UK's Permanent Representative, Sir John Goulden, afterwards

wrote to the Foreign Office suggesting that 'the mere threat and preparations [for a forced entry by ground troops] may be enough to persuade Milosevic to concede. But our experience in March suggests that we may well have to make the threat a reality.'

The American government was meanwhile adopting a very different posture. The initial failure of the air campaign to coerce Milosevic into submission predictably resulted in speculation in the media that NATO might launch a ground campaign in Kosovo. On 6 April, Secretary of State Albright moved to end the debate once and for all by declaring in a speech in Washington that America had no plans or intentions to deploy ground forces in a non-permissive environment.

In military terms, this unequivocal announcement was unfortunate, as it confirmed to the FRY that NATO's options were very limited, but Mrs Albright's words were influenced more by domestic political considerations than military ones. In the aftermath of the Lewinsky affair, President Clinton desired nothing more than a period of stability to revive the reputation of his presidency and secure victory for the Democrats in the US congressional elections in 2000, and Vice-President Gore's succession. The administration was acutely sensitive towards congressional opinion and, while there was much debate in the White House and Congress on the on the ground campaign issue, its outcome was far from certain. There were risks involved in effecting a radical change of policy, as the experience of Bosnia had demonstrated, and the ghosts of Vietnam had yet to be entirely exorcised. On the day after Mrs Albright's speech, the Secretary of State for Defence met his US counterpart, William Cohen, in Brussels, and suggested that the time had come to prepare contingency plans for a ground option to dislodge FRY forces from Kosovo. Planning should start on a bilateral US/UK basis and then rapidly bring in close allies before shifting focus to NATO. In response, Cohen could only promise to consult the President.

On the 9th, the issue became even more sensitive when the Russian President, Boris Yeltsin, threatened NATO with military action in the event of a ground operation in Kosovo. At precisely the same time, the Secretary of State for Defence was approving the dispatch of a second Armoured Battle Group to Macedonia under the mantle of KFOR to bring the total number of British troops in the region to 6,300. In conversation with CDS that day, Goulden urged caution over the deployment, which, he maintained, 'should be presented only as preparation for peace implementation and 'not as a move to put pressure on

Milosevic'. On 10 April, the Foreign Secretary spoke by telephone to QUINT foreign ministers and found them 'hesitant about ground troops'. A Ministerial NAC meeting in Brussels on the 12th likewise 'revealed a marked lack of enthusiasm for forced ground entry, though most agreed that the option should not be ruled out.' So the British government had to move with the utmost care.

By the second week of April, barely a fortnight after the start of Operation Allied Force, ground options studies were already circulating in the MOD. A paper submitted by the Directorate of Military Operations to CDS on the 11th argued that 'By confining itself to an air strategy, NATO may risk stalemate – stalemate represents failure and NATO must win.' In keeping with the views already expressed by CAS and ACAS, it went on to suggest that 'In order to conclude the crisis successfully, NATO will need to develop a coherent Air/Land campaign plan' and considered two basic concepts. A so-called 'limited' option confined to Kosovo would require a force of 100,000 troops to which the UK might contribute 35,000; an 'unlimited' option involving all-out conflict with the FRY could be undertaken by a force of 200,000, with a British force of 50,000. Both options envisaged participation by the United States, France and Germany, the unlimited option requiring an entire second corps, which only the US could provide.

Serious risks were involved. The FRY might respond with full mobilisation for 'a war of national survival', and there might still be a longer-term partisan insurgency after hostilities ended. The limited number of roads from Macedonia and Albania into Kosovo would enable FRY forces to block routes and channel the NATO advance; both countries were struggling to cope with the influx of Kosovo Albanian refugees, in any case, and would have the greatest difficulty accommodating the prolonged build-up of a NATO ground force too. The transport infrastructure was poor in many parts of the region and bomb-damaged in Kosovo itself, and weather conditions would restrict the availability of air support, particularly in the case of the 'unlimited' option, which would extend into the winter. Neither operation could be launched without a lengthy preparatory period. For the UK, this was estimated to be 90 days for the limited option and 180 days for the unlimited one; other participating nations might require even more time. Territorials and reservists would have to be called up in large numbers, and it would be necessary to deploy most of the Army's logistical units. The paper concluded by recommending that 'Planning for all ground options should proceed on the understanding that the political risks inherent in the unlimited option may be unacceptable.'

One of the first responses to the early ground options papers came from CAS. He questioned the feasibility of the 'unlimited' option altogether, for it would extend into the winter, when the difficulty of maintaining air cover would represent but one of many serious obstacles. His doubts were shared by other senior officers and officials in the MOD. Attention turned instead to the limited alternative, soon to be known as Option B MINUS. This focus was encouraged by the increasingly prevalent argument that it was possible to exaggerate the risks involved in a limited ground campaign. As the MOD's Permanent Under-Secretary put it,

With further intensification of the air campaign, taking advantage of the approach of improved weather, using more aircraft ... as well possibly as an easing of our self-imposed restrictions on collateral damage ... a ground force could be inserted more easily and effectively.

In the following weeks British ministers, military chiefs and officials maintained to their foreign counterparts that the FRY security forces, having been heavily degraded by NATO bombing, were unlikely to present a serious threat to a ground offensive. NATO should therefore formulate what the Air Staff described as a 'Joint Theatre Campaign' and concentrate on 'the creation of an operational environment which will permit ground forces to enter Kosovo at a reduced level of risk ... to ensure the expulsion of VJ/MUP forces if this proves necessary'. The air campaign 'must shape the battlefield for ground insertion, [and] continue to reduce Serbian capabilities'. A ground offensive could then be launched in so-called 'semi-permissive' circumstances: the FRY might not agree to NATO forces entering Kosovo but would no longer possess the military strength necessary to mount organised opposition. Far fewer troops would be required for a semi-permissive entry than an opposed entry: a figure of 50,000 was postulated instead of the 100,000 needed for the 'limited' ground option against organised opposition in Kosovo.

As an organisation, NATO needed little persuading that such a strategy was necessary. Javier Solana was largely in agreement with the British position, as was NATO's military high command. On 14 April SACEUR went so far as to suggest to CDS that a decision on ground options should be taken at the forthcoming NATO 50th anniversary summit in Washington, a course of action that CDS was quick to discourage on political grounds. On the following day the CMC raised the question of a ground campaign at a meeting of NATO

chiefs of defence staff and warned that 'if a ground option was to succeed before the end of the summer, a decision to initiate such an option should be taken next week.' Again, CDS pointed out that political decisions were needed first. It was subsequently agreed that informal planning for a ground campaign might begin at Supreme Headquarters Allied Powers Europe (SHAPE), although SACEUR considered that actual preparations were urgently required. 'We must get nations going as soon as possible,' he told CDS.

The key problem was the United States. On 19 April, the British Chiefs of Staff acknowledged:

No ground intervention could realistically take place without substantial US participation. Force generation, even for the limited option, would be difficult and it was important to start discussions with the US as soon as possible. However, the US remained nervous about deploying ground forces and, as they already contributed some 85% of the air effort, it might be difficult to press them too hard on providing a substantial proportion of the ground forces.

According to the British ambassador in Washington, President Clinton's natural tendency was to delay any hard decision on a ground campaign until it was forced on him; there was a 'nervousness in the administration at even privately discussing with Britain a shift to ground force options'. Indeed, Washington was particularly anxious that NATO's 50th anniversary summit should *not* be dominated by a debate on ground options, and pressed Javier Solana to announce publicly that NATO would 'keep all its plans up to date' – a phrase designed discourage any discussion of the issue at the summit. Solana had little choice but to comply.

There were hopes in London that the United States might be more willing to consider ground options if other European countries adopted the British stance, but they proved no less cautious than the Americans. France was probably the most important of the four nations central to British plans, but President Chirac's approach to the issue was decisively influenced by his own experience of live combat in Algeria and his perception that the French army was no match for its Yugoslav counterpart. The Yugoslavs, like the Algerian nationalists, were 'determined fighters [who] would be fighting on their own territory ... Furthermore, French troops were not used to war operations ... They had no experience in fighting against a determined enemy defending his sovereignty.' This outlook led Chirac to

urge restraint on the Prime Minister when they discussed future strategic options for Kosovo on 20 April. In his view, intervention on the ground was unlikely to receive the support of other NATO governments, nor of public opinion throughout Europe; moreover, it would severely provoke Russia and might result in a coup there by pro-Serbia elements. Chirac 'was not sure that Yeltsin and his Prime Minister, Mr Primakov, would be able to say that Russia would not become engaged and stay in power'.

The French government's position mirrored that of the presidency. A few days later, the Secretary of State for Defence told his French counterpart that the MOD had been considering the ground forces that might be required in so-called 'semi-permissive' circumstances, where the FRY had abandoned organised resistance and where, because of the humanitarian crisis, a deployment into Kosovo might be necessary. Mr Richard replied that France saw no difference between a semi-permissive and a hostile environment. He feared that the beleaguered FRY troops in Kosovo would barricade themselves in towns and hold Kosovo Albanian civilians to ransom, or that the VJ and MUP would launch counter-attacks on NATO forces from Serb territory. When CDS (who accompanied the Secretary of State) pointed out that the FRY security forces would have been 'highly degraded' by the air campaign, Richard replied that the level of degradation required before a ground operation began was likely to take a long time to achieve. France would prefer to plan on a bombing campaign lasting throughout the winter. He also doubted that a ground campaign could be confined to Kosovo, arguing that it would inevitably extend into Serbia.

With France's opposition if anything more implacable than America's, the British government turned its attention back to Washington. The Cabinet was convinced that detailed planning for semi-permissive and non-permissive ground operations should begin, preferably in conjunction with similar planning in the US. On this basis, during the 23-25 April NATO summit, the Prime Minister persuaded Mr Clinton to agree to a small British team visiting the US to discuss the available options, and CDS duly approached the CJCS, General Shelton.

However, subsequent discussions with the White House on 29 April revealed that US Defence Secretary Cohen did not favour this approach. He 'was petrified by the thought that it might leak that the US was planning for a ground war'. In response, Downing Street reiterated the standard British argument: if the air campaign was not successful in coercing

Milosevic, an alternative strategy would be required. Some serious military planning on ground options was therefore essential. But efforts to convert Cohen made no headway whatever. At their meeting on 30 April, the Chiefs of Staff were advised that there was still no agreement in Washington to allow bilateral US/British planning on ground options; there were acute US sensitivities in relation to possible opposed entry operations by NATO. On 3 May, CDS again spoke to General Shelton and found him disappointed that there had been no statement from the White House since the Washington Summit. 'Cohen had not moved.' When the issue was raised directly with Cohen again on the 6th, he suggested that President Clinton was responsible for the impasse.

By this time, an increased note of urgency was entering British pronouncements on the subject of ground options, as it was acknowledged that actual preparations for an opposed entry into Kosovo would have to begin by June if the operation was to be completed before the winter. As one paper put it, 'Time is short.'

Because of the early onset of winter in the Balkans, and the lead-time needed to prepare and deploy war-fighting forces, early decisions are needed in NATO on which ground options to pursue. This will also oblige us to take early decisions on politically difficult issues (e.g. mobilisation of reserves).

Clear time-scales were now being formulated. A paper prepared by the Army Board postulated that the NATO force of 100,000 troops required for an opposed occupation of Kosovo would take three months to assemble. More general British planning assumptions were constructed around this three-month schedule, envisaging air operations at an enhanced level until the end of August and a further increase in the intensity of the campaign in September, 'in concert with the prosecution of a ground campaign in a semi-permissive or non-permissive environment'. Yet the UK's near-total isolation on these issues is reflected in the fact that no equivalent timescales were propounded by NATO. SHAPE prepared an unofficial contingency plan for Option B MINUS, but it was to be offered for consideration only if political leaders agreed that planning could commence. When CAS was briefed on the air campaign during a visit to the USAF base at Ramstein, he was perplexed by the absence of any NATO timelines. After he suggested that timelines were essential 'to achieve linkage between the air campaign and future land ops', the CAOC briefing officer replied

'that timelines were not required because, in the absence of any political commitment and direction, there could be no land campaign.'

KFOR Plus

A meeting of the QUINT chiefs of defence staff on 6 May appeared to offer a new way forward. Once again, CDS explained UK reasoning over the necessity to plan for a ground option in the event that the air campaign was unsuccessful. According to the record, all those present supported his reasoning but were 'clearly worried about their own individual domestic political problems'. However, CDS received far more tangible support when he expressed concern that NATO would be unable to move quickly into Kosovo in the event of a peace agreement. KFOR's strength of 28,500 had been agreed before the onset of hostilities and was patently inadequate for the task of peace implementation in the aftermath of ethnic cleansing, the refugee crisis and sustained NATO bombing. 'There was a consensus that a force of at least 40,000 would now be necessary, in order to cope with implementing any agreement and helping with humanitarian and reconstruction tasks.'

Here at last was an opportunity. As CDS put it:

The expansion of KFOR 'would enhance our numbers and would provide a firm basis from which to change to a combined land/air option if necessary. Extra troops, even if announced as being engaged in the building up of KFOR to its pre-planned 28,500, would put pressure on Milosevic and get troops into theatre.

On the very same day, the Secretary of State for Defence pressed other NATO defence ministers to agree to an enlargement of KFOR.

The possibility of screening an enlarged ground force behind the facade of KFOR had in fact been considered by the Prime Minister as early as 19 April. On that occasion, he had asked for 'information on the number of NATO personnel currently in the Kosovo theatre of operations, and for an assessment of how many more could be put in place without it being obvious that we had changed strategy' (i.e. embarked on preparations for an opposed entry).

By the first week of May, some such approach appeared even more attractive. As the MOD Policy Director put it, 'This is the only option for which a NATO consensus currently exists.'

We should therefore press SACEUR to complete his review of NATO's existing plans for this option, and then encourage all Allies to make further pre-deployments to Macedonia. Action along these lines will serve both to shorten subsequent timescales for deploying larger forces and help put pressure on Milosevic to back down.

At NATO, after discussions with SACEUR, Sir John Goulden reached a similar conclusion and proposed that the alliance should 'continue detailed informal planning rather than press for an OPLAN; and ... build on the reinforced KFOR option'. At the very least, it would be important to secure American agreement to such an approach and obtain the support of 'two other major force providers' – preferably France and Germany. Goulden anticipated that the military in Washington, Paris and Berlin would be ready to embrace this strategy because they understood the demanding lead-times involved in organising a large-scale ground operation.

The immediate objective was to deploy the extra forces necessary for the expanded KFOR, which soon became known as KFOR PLUS. On 10 May, the Secretary of State for Defence again stressed the importance of enlarging KFOR to the French, German and Italian defence ministers, arguing that the American government was more likely to contribute troops if European allies provided a lead. Subsequently, he reported to US Defence Secretary Cohen that there was support in Europe 'for updating KFOR numbers in the light of changed circumstances' and found him favourably disposed to KFOR's augmentation. But Cohen was also alert to the possibility that ulterior motives lay behind the UK's support for an enlarged KFOR, and he flatly refused to discuss any move from KFOR PLUS to offensive ground operations designed for entry into Kosovo in a non-permissive environment. 'He did not want to be drawn into a quick-sand.'

So the concept of preparing for an opposed entry into Kosovo had not advanced very far when, on 13 May, an updated assessment of force levels and lead-times for ground operations was presented to the Prime Minister. This postulated a maximum British contribution of 54,000 troops to a NATO force of 140,000 for an opposed operation against

organised FRY resistance – an operation that would have to start by 15 September at the latest if it was to be completed before winter. A lead-time of 115 days would be required.

We would need increasingly to take specific actions in relation to these matters from 21 May (X-Day). We are already past the last date for securing the additional ammunition we need and would therefore have to seek to procure this off-the-shelf from other governments (which may not be easy). For a force at this level, delay beyond 21 May would increasingly risk either a campaign which could not be completed before the winter or a delay in the operational start date until next spring.

In short, immediate preparations were necessary if Option B MINUS was to remain open. Large-scale Allied participation, particularly by the Americans, was essential. 'Without it, the necessary force levels would be unachievable and we would lack core capabilities.' The assessment reiterated that the expansion of KFOR represented the most direct way forward but warned that the advantages of this approach were diminishing with the passage of time: 'There is a limit to the relief which can be provided by such a strategy.' British ministers and officials responded by increasing the pressure on the US to a point where relations between London and Washington became severely strained. On 17 May, an article appeared in the *London Times* on differences between the UK and US on ground options. It described President Clinton as the chief obstacle. In common with several similar stories appearing in the British press at this time, it was sourced to a Downing Street spokesman.

In a heated exchange that day, the White House pointed out to Downing Street that 'This was not the usual way London and Washington dealt with one another' and that the British government would not prevail over ground options if they attempted to 'box the president in'. To the Secretary of State for Defence, Cohen expressed his 'dissatisfaction at the informed speculation on ground troop options contained in the UK press' and demanded to know if the UK would commit forces on a large enough scale to lead an opposed entry into Kosovo.

In response, Mr Robertson could only fall back on the argument that it was necessary to deploy a much larger ground force into theatre, if only for peacekeeping purposes, but Cohen challenged even this contention and maintained that more peacekeepers could be dispatched to Kosovo at short notice if they were required. The French defence minister

agreed with Cohen. Other NATO leaders and ministers seized the opportunity to criticise the British government for 'opening up a public debate on ground force options, which might provoke unhelpful debate within the Alliance'. The documents even refer to a telephone conversation between the Prime Minister and President Clinton at this time that was evidently less than harmonious. The Americans continued to argue that any joint planning by the UK and US should relate to KFOR rather than an opposed entry. Discussion of a ground option might suggest to both Milosevic and NATO allies that the air campaign was in trouble. Cohen thought 'there was a real danger of a divisive debate within NATO which would detract from the necessary focus on the air campaign.'

At the heart of this disagreement lay the UK's continued adherence to the concept of a 'semi-permissive' environment in which Yugoslav forces, heavily degraded by months of bombing, were unable to mount organised resistance to a NATO ground offensive initiated in advance of a formal peace agreement. The US, like France, refused to accept the semi-permissive scenario: a ground operation would be launched in an environment that was either permissive or non-permissive. Among other things, this outlook ensured that American assessments of the forces required for a ground campaign were substantially higher than the figures mentioned in British planning documents. On 18 May Cohen insisted that 'There was currently no semi-permissive scenario in which the US would commit ground forces short of an overwhelming force package – this meant 175,000 troops for anything other than a permissive scenario. And it was not clear where such large numbers would be found.'

There was but one important attraction for the US in the immediate enlargement of KFOR, which was the possibility that it might allow a firm decision on Option B MINUS to be delayed until June. This sole consideration helped to produce a compromise between Downing Street and the White House. In accordance with the American view, there would be no acknowledged link between KFOR PLUS and Option B MINUS, but the US would agree to the expansion of KFOR and also to renewed *planning* for Option B MINUS within NATO. White House officials accepted that 'We [i.e. The US and UK] should do as much up front for KFOR as we could, and use that to prepare for StrikeFOR [i.e. the force required for Option B MINUS].' This would 'push back the time when a NAC decision was needed to a period of weeks, rather than days'.

Yet there was a world of difference between what the Americans described as 'planning' and the actual preparations required for Option B MINUS by this time. Indeed, it seems possible that the concept of 'planning' was only grasped by the US administration as a means of placating the British without conceding very much of substance. Commenting on a Washington Post headline that the President was considering ground options in Kosovo, his advisers told Downing Street that this was 'an exaggeration which risked causing an adverse reaction in Congress which would tie the Administration's hands'. Furthermore, after employing the term 'prepare for StrikeFOR', they promptly realised that this was also misrepresenting the President's position. To avoid any misunderstandings, they telephoned Downing Street and 'emphasised that Mr Clinton was not yet convinced that we should threaten a land operation'. The task of advancing from KFOR PLUS to the 'specific actions' deemed necessary by the MOD to prepare for Option B MINUS remained strewn with obstacles.

Nevertheless, on 20 May, the UK and NATO concluded that they had achieved some limited but important progress towards their goal. The Secretary of State for Defence therefore agreed with Solana that the next step should be to establish a clear link between KFOR PLUS and Option B MINUS with all the close allies – the USA, France, Germany and perhaps Italy. If they could be converted to the British stance, it would be possible to consult the full NAC. As Solana put it:

It would be important to choose the right time to ask Alliance leaders to commit formally to a strategy of forced entry into Kosovo. Momentum had to be built up beforehand. This could only be done by private agreement by a small group of Allies, allowing planning to proceed informally at SHAPE.

A friendlier exchange between the Prime Minister and the US President on 23 May offered some further cause for optimism. Mr Clinton seemed to echo the British line on Option B MINUS, accepting that NATO 'could not afford to foreclose on such an option, just because of the passage of time'. He believed it was necessary to 'take forward planning for ground options', and that Solana should develop a detailed plan within NATO without first seeking the approval of the NAC. Although this still fell far short of British aspirations, the Prime Minister nevertheless persuaded himself that 'Clinton had turned the corner on ground troops.'

The other close allies posed a far greater challenge. On 24 May, the Prime Minister tackled the formidable figure of President Chirac only to learn that there had been no change in his position at all. Indeed, if anything, he was even more obdurately dismissive of British strategy than he had been in April. According to Chirac,

A ground operation could not replace the air campaign for three reasons.

1. There would be no agreement in NATO, which would split;
2. It would be unbearable for the Russians ... Anything was possible including a coup and Russian support for the Serbs;
3. We had discovered that NATO was not that effective ... The Serbs had 50-70,000 men who were good warriors, knew the terrain and had been fighting for the last ten years. NATO would be sending soldiers who had never heard a gun and officers who had never commanded in the field. We would need a force not of 100,000, but 500,000.

Like the Americans, he would only acknowledge the need to plan.

Next day, the Secretary of State for Defence delivered the standard British line on Option B MINUS to his French counterpart, Mr Richard, arguing that it would soon be too late to launch an opposed entry into Kosovo and that overt preparations might persuade Milosevic to agree to a negotiated settlement. 'Richard said he was not sure if the French government agreed with this analysis ... The President and the Prime Minister ... would wish to weigh up the problems associated with preparing for an opposed entry with those of continuing with the bombing campaign throughout the autumn and winter.'

This was a diplomatic way of saying that France preferred to maintain the independent air campaign indefinitely. Her government did not accept that a ground campaign should be launched in the short-to-medium term if Milosevic refused to capitulate. Richard also maintained that Milosevic wanted a ground war 'because he calculated that his forces could inflict more casualties on NATO in these circumstances'. The Secretary of State disagreed, arguing that the air campaign would have further weakened Yugoslavia's military capability

by the time a ground war began in the autumn, and he implored Richard to support the British position at the forthcoming meeting of QUINT defence ministers on 27 May. 'It was vitally important that the European Defence Ministers stood firm, showing their readiness to plan for Option B MINUS. Otherwise the US would have every excuse not to do so.'

France's position, which was mirrored by Germany's, proved decisive in the debate on Option B MINUS. MOD officials were by this time reaching the inevitable conclusion: there was no realistic scope for an opposed entry into Kosovo in 1999. In the absence of support from close allies, the strategy of preparing covertly for B MINUS was no longer tenable. It had always been a difficult approach for MOD officials to challenge because it was so rapidly embraced at the very highest levels of the ministry, and it had offered a genuine glimmer of hope at the beginning of May, in any case. Yet no firm decision on KFOR PLUS had been taken by the last week of the month, and the MOD's deadlines for the start of preparations for Option B MINUS had been missed. Against this background, the Balkans Secretariat addressed a carefully worded minute to the Secretary of State calling the entire concept into question.

To provide political and military planners with the scope for incremental decision making on deployment, the MOD had considered building an Option B(-) force in discrete packages. Implicit within this approach is the intention to use the lesser force levels of KFOR(+) as a building block to achieve the force levels required for Option B(-). However, because of the light nature of most of the additional units for KFOR(+), the time gained by doing so will be insufficient to meet the latest assumed date for the start of operations.

The next day, they recommended to Mr Robertson that a decision on proceeding with the total package of preparations for Option B MINUS be deferred until there was wider support, particularly from the US and France, and pointed to the overwhelming arguments against initiating any such preparations. Not one other ally was openly preparing for the option and several were strongly hostile to it, so there was a serious risk that NATO would be split over the issue. Public opinion would not back the large-scale commitment of British ground forces in the absence of support from other allies, and diplomatic initiatives – particularly those involving Russia – would be jeopardised. The key front-line state, Macedonia, was refusing to permit offensive operations from her territory, and access to lines of communication

through Greece was in doubt. Finally, an announcement that the UK was preparing unilaterally for Option B MINUS (many of the preparations, such as the call-out of reservists, could not be kept secret) might deter other allies from contributing troops to the enlarged KFOR. A further memorandum then reinforced the message:

We are already beyond the 115-day point for an operation beginning on 15 September (which we assess to be the last sensible start date before the winter) ... We assess that any delay beyond early June would probably mean that NATO overall was unable to conduct Option B(-).

In response, the Secretary of State decided to take certain limited administrative measures cosmetically designed to 'keep the option open' but deferred decisions on more extensive preparations that were already considered necessary by the MOD if Option B MINUS was to be launched by 15 September. He and the Prime Minister then made one final, desperate attempt to win over the UK's close allies.

They were unsuccessful. In a further telephone conversation on the 27th, President Clinton again made reassuring noises about 'planning' to the Prime Minister but left Downing Street more pessimistic about his position. A meeting with the French Prime Minister, Mr Jospin, was even more discouraging. When the QUINT ministers met that day, they committed additional forces to KFOR PLUS, but the UK was isolated and defeated in their discussion of Option B MINUS. Realising that the British lacked any support from France or Germany, Cohen then reverted to an entirely negative stance and stressed the enormous practical and political problems involved in an opposed entry. 'The force would need to be 200,000 strong,' he declared to the other ministers.

To meet the timelines we ought to have started training at least two weeks ago ... In his view, if NATO stayed united, intensified the air campaign, strengthened KFOR and stopped the oil imports into Yugoslavia, Milosevic would crack.

Finally, he deprecated any suggestion that KFOR PLUS might be employed as a combat force. Ostensibly, the meeting delayed a decision on B MINUS until 7-8 June, when the G8

heads of government were due to meet at Bonn, but this postponement actually rendered impossible an opposed ground operation into Kosovo until the following spring.

After the conclusion of hostilities in Kosovo, several commentators argued that the threat of a NATO ground campaign finally persuaded Milosevic to accept a negotiated settlement. According to this view,

Political frustration with a war which appeared to be never-ending, coupled with the decision that the risks of a ground offensive were smaller than the alternative of discrediting the Alliance, ultimately persuaded western governments to plan for the one option which they had always ruled out: a ground offensive. Milosevic ... knew that the end result would be worse for Serbia than just the loss of Kosovo.⁴⁴

Importance was also attached to a speech delivered by Mr Clinton to the US Air Force Academy, Colorado, on 2 June, which made clear that the US had 'not ruled out options beyond bombing to bring about a resolution'. Milosevic accepted western demands for the FRY's security forces to be withdrawn from Kosovo the very next day.

Given the prominence of such arguments – often accompanied by the assertion that the air campaign failed to coerce Milosevic into surrender – it is legitimate to assess how close NATO really was to a ground campaign at the beginning of June 1999. All the evidence demonstrates that only one of the 'close allies', the UK, had accepted the need to prepare for the opposed ground option B MINUS by this time. The British government had failed to secure the support of France and Germany, and, crucially, the United States had refused to commit itself to the option either in the absence of any European consensus. Not one other NATO country had even started any preparations for an opposed entry into Kosovo. The strategy of preparing under the cover of KFOR had been frustrated by the long delay involved in sanctioning the creation of KFOR PLUS and by the refusal of the US, France and Germany to accept a link between KFOR PLUS and Option B MINUS, and the MOD had lost faith in the entire concept in any case. At the beginning of June, when Milosevic signified his willingness to agree terms for ending the conflict, KFOR comprised only 15,000 troops – only just over half the strength of 28,500 originally envisaged by NATO and only one third of the predicted strength of KFOR PLUS.

President Clinton's speech on 2 June contained little that was new. In fact, he had adopted a very similar stance in public on 18 May, when his pronouncements had no visible effect whatsoever on Milosevic. Nor were his remarks part of any concerted attempt by the NATO allies to *threaten* the use of ground forces in Kosovo during the closing stages of the war. Indeed, on 1 June, the Secretary of State for Defence publicly rejected press speculation that a ground force was being assembled for an opposed entry, declaring explicitly that the UK was only committing troops to KFOR PLUS, which was not an invasion force.

Did any western military leaders perceive a fundamental shift in NATO's strategy at the beginning of June? DSACEUR, General Smith, was adamant. In conversation with CDS on the 3rd he declared that 'Whether or not Milosevic realised it, he had succeeded in delaying a NATO decision [on Option B MINUS] to the point where it was nearly impractical to conduct a campaign this year.' The next day, CDS spoke to General Shelton, informed him that the UK was still preparing for Option B MINUS, and asked how US plans were developing.

Shelton replied that they had had useful discussions with the President but no decision. The greatest concern was for the sustainability of SACEUR's plan.⁴⁵ US military planners were most concerned about the fragility of the line of communication through Albania. As an example, Shelton quoted the need to provide one million gallons of fuel a day for which they would have to build a pipe line, use ferries and tankers, rebuild parts of the roads and still have to use CH47 helicopters with under-slung loads of fuel. The whole issue was problematic and the advice that has been given was that this was logistically unsustainable.

On the basis of these comments, it is hardly surprising that CDS himself remained 'sceptical about US resolve on B MINUS'. Whatever persuaded Milosevic to agree to withdraw his forces from Kosovo, it was manifestly not an impending NATO ground campaign or even the threat that one might be initiated.

Diplomacy and the Conclusion of Operation Allied Force

The Kosovo conflict has sometimes been described as the first war in which victory was achieved by air power alone. Yet this was only true – if it was true at all – in a purely military sense. It was true in so far as air power (including maritime air power) was the only military medium employed against the FRY. From a broader perspective, the air campaign was always part of a joint strategy in which military force and diplomacy complemented one another. In the later months of 1998 and early 1999, NATO used the threat of air strikes to underpin diplomatic efforts to solve the Kosovo crisis, an approach that succeeded at first but failed later. NATO then launched Operation Allied Force, and military action – specifically, the air campaign – assumed pride of place over diplomacy for a time. But the diplomatic process never ceased altogether, and diplomatic initiatives were renewed when it became clear that a military solution would not be achieved without a protracted period of hostilities.

Central to any diplomatic solution to the crisis was Russia, the only European power sympathetic to the FRY. It was always clear that Milosevic's regime would find itself impossibly isolated on the international stage in the absence of Russian diplomatic support. The Kosovo crisis confronted Russia with an almost insoluble dilemma – an awkward choice between her historical and racial links with Serbia on the one hand and her dependence on foreign economic and financial aid, chiefly from the leading members of NATO, on the other. During the summer of 1998, Russia was plunged into a particularly severe financial crisis. The proposed solutions included a major EU programme to assist with the reform of Russian economic, social and political institutions and a substantial aid package from the International Monetary Fund (IMF) to help her to pay the interest on her foreign debts. Both these initiatives stalled when Operation Allied Force began in March 1999. The Russian Prime Minister, Mr Primakov, abruptly cancelled a scheduled visit to the IMF on the day before the air campaign started.

Moscow predictably responded to Allied Force with public declarations of outrage and demands that the bombing should cease forthwith. Nevertheless, Primakov almost immediately flew to Belgrade in an attempt to broker a compromise with Milosevic, and Mr Ivanov, the Russian foreign minister, assured the UK that Russia had no intention of becoming involved in confrontation or escalation in the Balkans. After Primakov's peace

initiative failed, President Yeltsin appointed the former Russian Prime Minister, Viktor Chernomyrdin, as his envoy to Yugoslavia. During his time as Prime Minister, Chernomyrdin had worked with many western leaders, among whom he commanded considerable respect, and Kremlin officials believed he might draw on his past experience and reputation to promote unorthodox but effective solutions to the conflict.

For much of April, NATO, the FRY and Russia occupied three separate positions on Kosovo. NATO's political objectives were confirmed at a meeting of alliance foreign ministers in Brussels on the 12th, which demanded that Milosevic

- Ensure a verifiable stop to all military action and the immediate ending of violence and repression;
- Ensure the withdrawal from Kosovo of the military, police and paramilitary forces;
- Agree to the stationing in Kosovo of an international military presence;
- Agree to the unconditional and safe return of all refugees and displaced persons and unhindered access to them by humanitarian aid organisations;
- Provide credible assurance of his willingness to work on the basis of the Rambouillet Accords in the establishment of a political framework agreement for Kosovo in conformity with international law and the Charter of the United Nations.

The FRY, by contrast, would only agree to a reduction in troop numbers, although Milosevic also offered to resume negotiations on other issues if the air campaign ceased. Russia's stance (described below in detail) lay between the two and was initially unacceptable to both.

The NATO powers were adamant that the Kosovo crisis should not cause a return to the East-West rivalries and antagonisms of the Cold War. They had few doubts about their ultimate capacity to prevail in the conflict with the FRY but recognised that Russian pressure

on Milosevic could produce a very much faster and easier victory. Their ultimate aim was to keep Moscow involved in the diplomatic process while detaching her from Belgrade at the same time. If the Russian stance on Kosovo could be manoeuvred into closer proximity with NATO's position, Milosevic would have little option but to submit.

This was a difficult task but not an impossible one. Russia's economic weakness drastically curbed her freedom of action and there was good reason to believe that the prospect of a generous package of financial aid would increase the likelihood that Mr Yeltsin's government would co-operate. In discussion with Javier Solana in April 1999, the Prime Minister declared that he wanted to tie the Russians into a common Western effort and launch a big initiative at the G8 Summit in June to provide support for Russian economic reform and transition.

Furthermore, NATO's wartime demands only represented an update of earlier UN resolutions on Kosovo, which Russia had supported. Hence, Russia had implicitly accepted that the FRY security forces were employing excessive and indiscriminate force in Kosovo, that there should be an immediate cease-fire there, and that a humanitarian catastrophe was impending long before NATO bombing began. Her government had also agreed that the FRY should halt all action by the security forces affecting the civilian population of Kosovo and order the withdrawal of the security units concerned, enable effective international monitoring there, facilitate the return of refugees to their homes and allow access for humanitarian organisations. In the aftermath of bombing and ethnic cleansing, it would clearly have been impossible for the refugees to return to their homes or for international monitoring teams to work in Kosovo without the accompanying military presence now demanded by NATO, and the fact that neither NATO nor Russia wished to see the establishment of an independent Kosovo ensured that there was plenty of scope for compromise over a post-war political settlement. In conversation with President Yeltsin on 20 April, President Clinton insisted that 'there was substantial common ground between NATO and Russia on what Milosevic needed to do to bring about an end to the bombing.'

Following discussions between Chernomyrdin and Milosevic and the reaffirmation of NATO's principles at the Washington summit on 23 April, several western statesmen visited Russia to examine the scope for a common stance on Kosovo. They included the American Deputy Secretary of State, Strobe Talbott, and Prime Minister Persson of Sweden. During their discussions, two basic obstacles to an agreement were identified. First, while NATO

was intent on the withdrawal of *all* FRY security forces from Kosovo, Russia favoured only the withdrawal of VJ and paramilitary forces and argued that MUP and border guards should remain. However, they did agree that some withdrawal should take place. Second, NATO was determined that the international military presence established in Kosovo after the war should operate under its own command and control, and not under the UN. It was hoped that a NATO-led peacekeeping force could be deployed with the support of a UNSCR, but direct UN command in previous peacekeeping operations in Somalia and Bosnia had not been entirely effective. The Russians, on the other hand, advocated the deployment of a UN force in which their own troops would participate. Yet even here they demonstrated some flexibility: Chernomyrdin told Persson that 'he could see in front of him a NATO-led force, with Russia as a participant.' So the remaining differences between NATO and Russia were far from insuperable and there was enough consensus for them to agree on a general statement of principles for resolving the conflict.

It would have been unrealistic to expect Russia formally to align herself with NATO, but there were other international organisations, such as the G8, which represented both the leading NATO powers *and* Russia. On 28 April the Foreign Secretary suggested to his QUINT colleagues that the G8 might act as a medium for narrowing the gap between NATO and Russia and proposed an early meeting of G8 foreign ministers for precisely this purpose. This occurred on 6 May and produced an agreed declaration on a desirable 'end state' for Kosovo that required:

- An immediate and verifiable end to the violence and repression in Kosovo;
- Withdrawal from Kosovo of military, police and paramilitary forces;
- Deployment in Kosovo of effective international civil and security presences, endorsed and adopted by the United Nations, capable of guaranteeing the achievement of common objectives;
- Establishment of an interim administration in Kosovo to be decided by the Security Council of the United Nations to ensure conditions for a peaceful and normal life for all inhabitants in Kosovo;

- The safe and free return of all refugees and displaced persons and unimpeded access to Kosovo by humanitarian aid organisations;
- A political process towards the establishment of an interim political framework agreement providing for substantial self-government for Kosovo, taking full account of the Rambouillet accords and the principles of sovereignty and territorial integrity of the Federal Republic of Yugoslavia and the other countries in the region, and the demilitarisation of the KLA;
- A comprehensive approach to the economic development and stabilisation of the crisis region.

The G8 statement was deliberately framed in very general terms on which all the foreign ministers could agree, the details being left for future negotiations. The fundamental difference between the statement and the Rambouillet demands lay in the role that it assigned to the United Nations. In so far as the western powers would only accept an international security presence in Kosovo that was NATO-led, the statement hinted that there might be some means of combining this stipulation with Russia's insistence that the peacekeeping force should deploy under UN auspices. It thus brought Russia and NATO closer together, leaving the embattled FRY even more diplomatically isolated. In time, it would provide a workable basis for resolving the Kosovo conflict.

On the day before the G8 statement was issued, US Secretary of State Madeleine Albright proposed to the Foreign Secretary that Finland's president, Martti Ahtisaari, might usefully work alongside Mr Chernomyrdin on Kosovo, preferably as a UN envoy. She saw Ahtisaari as an ideal figure to bridge the remaining gap between NATO and Russia, for he had an established reputation as an international envoy and a long career in diplomacy with the United Nations. In 1990, he headed the UN's monitoring of Namibia's transition to independence, and he was one of several European envoys who tried – albeit unsuccessfully – to halt Yugoslavia's slide into ethnic conflict in 1993. He had also concluded negotiations on Finland's entry into the EU. His country was not a member of NATO and had improved its relations with Russia under Ahtisaari's presidency.

It proved impossible to appoint Ahtisaari under UN auspices, but the EU was involving itself further in the crisis at this time by implementing a range of economic sanctions against the FRY and, on 9 May, the QUINT foreign ministers agreed that Ahtisaari should hold an EU mandate in his discussions with Chernomyrdin. NATO now hoped to turn the G8 statement into a fully-fledged UNSCR. Russia still represented a serious obstacle to such a strategy, but discussions between Strobe Talbott and Chernomyrdin over the next few days demonstrated that Moscow was very anxious to develop the G8 statement into a workable agreement on Kosovo. On 15 May, Talbott told QUINT political directors that the Russians wanted a solution to the crisis 'within a month'. The clear implication was that Russia needed to remove Kosovo from the international agenda before the G8 summit in the middle of June, which was to consider solutions to her dire economic situation. In addition, Chernomyrdin apparently believed that an agreement would improve his chances of succeeding Mr Yeltsin as President of the Russian Federation.

On 18 May, two weeks of intensive negotiations began between Chernomyrdin (who was also in communication with Milosevic in Belgrade), Ahtisaari and Talbott. Differences remained over the extent of the FRY's withdrawal from Kosovo and the composition of the peacekeeping force, and over sequencing the various phases of a settlement. These comprised a cease-fire and the commencement of a verifiable withdrawal of FRY forces, the suspension of NATO's air campaign, the passage of a UNSCR covering the deployment of a peacekeeping force in Kosovo and the deployment of the force itself. NATO insisted that a cease-fire *and* the beginning of a verifiable withdrawal should precede the suspension of Operation Allied Force whereas the Russians argued that a bombing pause should follow the FRY's formal acceptance of the G8's terms.

During the final week of May, British and French intelligence revealed that rival 'peace' and 'war' parties in Belgrade were attempting to influence Milosevic, but it appeared that the war party was in the ascendancy. Nevertheless, on 28 May, Chernomyrdin informed Ahtisaari that Milosevic was ready to accept the G8's principles for ending the conflict in Kosovo. The news was naturally received with great scepticism by western statesmen and negotiators. The Prime Minister doubted that Milosevic was 'anywhere near backing down', while Ahtisaari wanted more evidence of a genuine change in the FRY's stance. Still, the possibility of a settlement encouraged him to visit Belgrade to ascertain the true position.

There is no obvious explanation for the sudden shift in Milosevic's stance. It is possible that Chernomyrdin intimated to him that he could not count on Russia's diplomatic support indefinitely; or it may be that the Yugoslav leader decided his country could no longer bear the steadily increasing military and economic damage inflicted by Operation Allied Force. He would almost certainly have been struck by the vagueness of the G8 principles and, to judge from his subsequent actions, probably expected to secure concessions when it came to their detailed implementation. What *is* clear, however, is that the subsequent peace initiative conducted by Ahtisaari and Chernomyrdin was *not* the cause of Milosevic's change of heart (as is often assumed) but the consequence of it.

On 1 June, Ahtisaari met Talbott and Chernomyrdin in Bonn to produce a document encapsulating the G8 principles that could be presented to Milosevic, but there remained a substantial gulf between Russia and the leading NATO powers. Once again, therefore, it was pragmatically decided that this paper should be framed in general terms on which both sides could agree; the detailed points still at issue between them were consigned to a footnote. On the 2nd, Chernomyrdin and Ahtisaari travelled to Belgrade, where Ahtisaari guided Milosevic through the paper. According to one account, he omitted completely the final footnote recording the different NATO and Russian positions, an approach that would clearly have suggested to Milosevic that he had been more completely abandoned by Russia than was really the case. A second source suggests, however, that the final footnote was read out and explained but was not attached to the document given to Milosevic and subsequently presented to the Serb Parliament. Milosevic asked for concessions but was told that the terms were non-negotiable. Evidently there was also some discussion of the precise means by which the G8 principles might be implemented. On the following day, Milosevic informed a surprised Ahtisaari that the Federal Government of Yugoslavia and the Serb Parliament accepted the peace document he had brought to Belgrade.

Work then began to devise a so-called Military-Technical Agreement (MTA) providing for a ceasefire, the withdrawal of FRY security forces from Kosovo, the suspension of Operation Allied Force, the deployment of a peacekeeping force and the necessary UNSCR. Differences immediately arose over the details of the agreement reached in Belgrade on 2-3 June. A copy of the document approved by the Serb Parliament and handed to the western media by sources in that parliament did not stipulate that it would be necessary to withdraw

all FRY security forces from Kosovo. Nor did it refer to the requirement that the peacekeeping force should be subject to unified command and control under NATO.

The complex issue of sequencing also remained contentious. NATO's view was that the MTA should lead to a ceasefire in Kosovo and the immediate initiation of a verifiable withdrawal by FRY security forces, followed by the suspension of the air campaign and the deployment of KFOR. At the same time, a UNSCR would be prepared and approved. Milosevic's position was that the ceasefire should be followed by a demonstration of the FRY's intention to withdraw from Kosovo. Operation Allied Force would then be suspended, and three successive stages would ensue: the preparation and approval of a UNSCR, the issue of a NATO ACTORD and the deployment of KFOR. At a meeting on 6 June, CDS, DSACEUR and the Commander of KFOR (Lieutenant General Jackson), noted that 'The second way could be strung out all over the summer' and was therefore unacceptable. Resolving these differences proved all the more complicated because Russia quickly reverted to a more obstructive stance, following strident protests from the FRY's supporters in Moscow against the concessions Chernomyrdin had apparently granted to NATO.

Further challenges for NATO included the future of Operation Allied Force and the maintenance of alliance cohesion. On hearing that an agreement had been reached in Belgrade, and without clarification of its precise contents, some 16 out of 19 NATO members signified their desire to suspend the air campaign as soon as possible. Ahtisaari himself asked Mr Blair if the bombing could be stopped. But the suspension of Allied Force would have reduced pressure on the FRY to agree detailed terms that were acceptable to the alliance. As DSACEUR put it,

The problem lies, from a military point of view, in arriving at the delivery of the agreement while maintaining pressure. If we don't keep pressure on the Serbs, we fear that we may arrive at a position where we cannot deliver the agreement ... We need to maintain the pressure of bombing, within the current guidance ... until we have an agreement that can be delivered.

This was indeed an eloquent tribute to the crucial role played by air power in deciding the outcome of the Kosovo crisis, as well as a perfect illustration of how air power and diplomacy complemented one another during the closing stages of the conflict. The suspension of the

air campaign might well have encouraged Milosevic to seek better terms, but the appearance of overt divisions within NATO would also have strengthened his negotiating position. For the sake of alliance cohesion, a compromise was necessary. In deference to the sensitivities of most NATO members, SACEUR reduced the tempo of the air campaign, and the CAOC shifted its focus almost entirely towards fielded forces in Kosovo, but the US and UK blocked the NAC's efforts to pause the bombing completely and insisted on continuing Allied Force until a satisfactory agreement was reached.

A meeting between NATO and Yugoslav military leaders was duly convened at Kumanovo in northern Macedonia on 5 June with the aim of producing a workable MTA. Lieutenant General Jackson, representing NATO, brought with him a draft agreement conforming to the alliance's view of sequencing and envisaging a seven-day time-scale for implementation. NATO was determined that there should be no negotiation: Jackson was simply to present the FRY representatives with the MTA and obtain their signatures. The draft MTA was sent to Belgrade prior to the meeting but without the support of an agreed UNSCR. At this stage, the Russians were blocking clauses demanding the withdrawal of *all* FRY security forces and providing for a peacekeeping force 'including substantial NATO participation, under unified command and control' – a form of words designed to conceal the reality of unified command and control *under* NATO. On arriving at Kumanovo, the FRY representatives declared that they could only discuss the withdrawal of their security forces – a process expected to require at least two weeks. The next day, they asked for an immediate bombing pause, suggesting that this could be followed by the preparation of a UNSCR; only then would FRY forces be fully withdrawn. The meeting broke up at 0200 on 7 June without any agreement. 'Back for work as normal,' SACEUR commented grimly.

The four close allies – the US, the UK, France and Germany – concluded that Milosovic was seeking to exploit differences between NATO and Russia and agreed that, while diplomatic efforts continued, the air campaign should be intensified. Open-ended debate on the UNSCR could not be permitted. The air attacks were duly stepped up: while 483 sorties were flown on 6 June, the daily rate exceeded 650 on both the 7th and 8th. If there had been any expectation in Belgrade or Moscow of a bombing pause, it was thereby quickly dispelled. This was particularly important in the Yugoslav capital, where the general public had received news of the peace agreement with jubilation. 'The people there were full of hope

and emotion, feeling that peace was on hand.' Bolder leaders than Milosevic would have thought very carefully before subjecting such a war-weary population to renewed hostilities.

Against this background, the two issues that had prevented agreement on a UNSCR were soon resolved. The final document continued to insist on the withdrawal of all members of the FRY security forces but permitted the return of 'an agreed number of Yugoslav and Serb military police personnel' to Kosovo to perform functions specified in an annex. These included liaison with international civil and military authorities, marking and clearing of minefields and maintaining a presence at Serb patrimonial sites and border crossings. All reference to NATO disappeared from the main body of the document, which mentioned only the 'relevant international organisations to establish the international security presence in Kosovo', but this statement was again linked to an annex specifying 'substantial NATO participation' that 'must be deployed under unified command and control'. This format, contained as it was in a UNSCR, allowed Milosevic to claim quite untruthfully that 'The international forces being deployed in Kosovo with the task of equally ensuring the safety of all citizens will be under UN auspices.' In fact, only the establishment of a new *civil* government in Kosovo was to be managed by the UN. The task of peacekeeping was assigned to NATO.

Other clauses of the SCR likewise offered only cosmetic concessions to Milosevic to assist him with the task of selling the agreement to the FRY's political leadership and electorate. The Rambouillet Accords had specified that a final settlement for Kosovo would be determined by an international meeting three years after a peace agreement entered into force; this settlement was to be influenced by a variety of considerations, including 'the will of the people'. Elsewhere, the Accords simultaneously reaffirmed 'the commitment of the international community to the sovereignty and territorial integrity of the Federal Republic of Yugoslavia'. But the Accords did not specifically link the 'final settlement' to the FRY's sovereignty and territorial integrity. By contrast, the SCR made no mention of any international meeting on Kosovo's future and insisted on a 'political process ... taking full account of the ... sovereignty and territorial integrity' of the FRY.

In a further attempt to show that he had obtained substantially improved terms, Milosevic afterwards proclaimed publicly that this represented a 'guarantee' of the FRY's sovereignty and territorial integrity. He did not draw attention to the fact that the so-called 'guarantee'

had been offered by the G8 more than a month before, at which time he had chosen to ignore it. In any case, the assurances on offer were strictly short-term. The 'political process' referred to in the SCR was only to lead to the establishment of 'an *interim* political framework', in other words a framework that might be subject to later alteration. Only this *interim* framework was explicitly linked to the FRY's sovereignty and territorial integrity. In this respect, from Belgrade's perspective, the SCR did not in fact represent a very tangible improvement over Rambouillet. Indeed, it went on to stress that the interim political framework was also to take 'full account of the Rambouillet Accords', and that a longer-term 'process to determine Kosovo's future status' would likewise take account of the Accords. These provisions created ample scope for the referendum so strongly favoured by the Kosovo Albanians at Rambouillet and so strenuously resisted by the FRY. Equally, while the SCR made no mention of the sweeping rights of transit through the FRY demanded for NATO forces in the draft Status of Forces Agreement tabled at Rambouillet, several sources suggest that this demand had always been negotiable.

On 9 June, at Kumanovo, COMKFOR again met with a Yugoslav delegation led by Generals Marjanovic and Stevanovic and presented them with the MTA, which had been revised to take account of the UNSCR. This time, they signed the agreement on the FRY's behalf, and Lieutenant General Jackson then signed for NATO. Nevertheless, soon afterwards, the VJ bombarded KLA positions near the Albanian border and there were additional reports of shelling into Albania itself. In response, NATO air forces struck numerous dug-in artillery positions as well as armoured fighting vehicles and tanks. But it finally became clear that a full-scale withdrawal by the VJ and MUP had commenced, and Javier Solana duly suspended Operation Allied Force on the 10th. KFOR's peacekeeping mission was then authorised by the passage of UNSCR 1244, and a NATO ACTORD provided for KFOR's deployment two days later.

RAF Operations in Retrospect

During the first week of June, when Milosevic signalled his preparedness to accept the G8 peace proposals, the RAF's GR7 and GR1 detachments saw their operations scaled down. However, GR7 operations were intensified again after the collapse of negotiations to secure the withdrawal of FRY forces from Kosovo. The final GR7 mission to release weapons during Allied Force dropped air-burst 1,000lb bombs on to artillery and mortar positions on 7 June.

Subsequent tasking did not involve any strikes, partly because of an absence of targets and partly because of airborne cancellations by the CAOC in anticipation of the MTA.

Following the cessation of hostilities, the detachment was placed on 24-hour ground alert, three pairs of aircraft maintaining readiness states of 15 minutes, one hour and 90 minutes respectively (later one pair maintaining a 60-minute readiness state for eight hours per day). They could have provided close air support at low level for British ground troops as they moved into Kosovo, but the NATO peace-implementation force was unopposed. The last VJ and MUP units left Kosovo on 20 June, when Allied Force was formally terminated, and the Harriers returned to RAF Wittering during the following week.

In total the GR7 detachment flew some 850 operational sorties for 1,802 hours between 24 March and 9 June 1999. They delivered 911 bombs divided as follows:

PWII	126
PWIII	3
1,000 lb	223
RBL755	559

These figures clearly reflect the effort expended on dynamic KEZ missions relative to LGB strikes on pre-planned targets; the RAF's RBL755 accounted for nearly one third of all NATO cluster bombs delivered during the campaign. Yet the effectiveness of KEZ operations has been the subject of much debate. Attacks on deployed forces in Kosovo certainly impeded their activities but did not halt them. Observers recorded that the VJ withdrew in good order at the end of the war and still possessed an abundance of vehicles, heavy weapons and equipment. As we have seen, operations against fielded forces in Kosovo produced a very low return in relation to the substantial effort involved, and there was strong pressure from the CFACC to redirect at least some of NATO's bombers towards strategic targets in Serbia.

A number of factors served to reduce the impact of KEZ operations, but the greatest obstacle was the weather. Poor weather caused 198 GR7 sorties to be cancelled on the ground in April and May, while a further 117 sorties were aborted in the air – a total of 315 – and poor weather also severely disrupted GR7 missions during the first week of the operation. The

following table reveals that the weather was by far the largest single cause of GR7 mission aborts.

Causes of GR7 Mission Aborts (% of weapon sorties⁴⁶ aborted)

Weapon	PWII	PWIII	RBL755	1,000lb	1,000lb AB	Other
Weather only	55	100	28	43	17	60
No task or target	2	0	27	11	27	27
No positive target ID	4	0	3	0	3	0
TIALD US	1	0				
Target obscured	4	0	<1	1	0	0
Collateral damage	3	0	2	0	0	0
Aircraft U/S	10	0	8	11	7	1
Fuel	3	0	10	11	9	0
Higher Authority	9	0	14	14	26	0
Support Assets Unavailable	2	0	4	6	5	0

Cloud cover also hampered assessments of weapons accuracy and the collection of BDA. The hopeful release of 'dumb' 1,000lb bombs into thick cloud compared unfavourably with weapons-system video showing precision-guided weapons striking their targets. It is therefore not surprising to find periodic discussions of low-level flying in the documents, and Operation Allied Force was inevitably followed by proposals to equip the RAF with a PGM that could be released through cloud. Low-level flying was repeatedly ruled out because of

the presence of both SAMs and MANPADS in Kosovo. There were few mountain passes through which low-flying aircraft might have entered Kosovo airspace and the deployment of MANPADS in these areas seemed very likely.

The constraints imposed by poor weather on GR7 operations were exacerbated by enemy counter-measures. The VJ and MUP proved hard to find. In 1999, UK doctrine for both CAS and Battlefield Air Interdiction (BAI) emphasised that these roles should be conducted in co-ordination with friendly ground forces. In Kosovo, the GR7s were required to undertake so-called CAS and BAI in an environment where there were no friendly forces other than the KLA. As there was no threat of a full-scale ground war, the FRY security forces could afford to sacrifice their combat capability in favour of dispersal or concealment, and their tactical deception measures were clearly very successful. Their early warning and intelligence provisions were no less effective, whereas NATO's ISTAR resources sometimes proved inadequate, and the Assembly Area targets regularly bombed in the absence of more specific target information were not always militarily important. As one Lessons Identified (LI) report put it,

Limitations in ISTAR resulted in attacks against low value targets, such as woods where it was thought that enemy forces may be concealed or against revetments and scrapes (whether they were occupied could not be ascertained from medium altitude) rather than vehicles as such.

Poor weather and strict ROE conspired with this lack of intelligence to prevent the majority of KEZ sorties from attacking targets. Of 889 planned sorties with RBL755 and free-fall 1,000lb bombs, almost all of which were KEZ sorties, some 320 were cancelled on the ground, and at least 350 of the sorties actually flown returned to base without releasing weapons. In other words, fewer than 25 per cent of planned GR7 KEZ sorties bombed a target. The dispatch of more GR7s to Gioia del Colle early in May made little material difference: the extra aircraft proved difficult to employ to any significant tactical effect because of the weather and the continuing shortage of tasking. Some 248 day-KEZ sorties employing RBL755 and/or free-fall 1,000lb bombs were planned for the GR7s between (and including) 14 and 31 May. In the event, only 30 of these sorties (12.1 per cent) actually released weapons – an average of just 1.66 per day. Of the 30 sorties that bombed, 14 were flown on 29, 30 and 31 May, when weather conditions were relatively favourable. Excluding

this latter period, the average daily number of GR7 KEZ sorties releasing weapons in the second half of May was just 1.06.

Finally, the weaponry available to the GR7s during KEZ missions was of questionable accuracy and effectiveness. The RBL755 cluster bomb proved unsuited to the operational task in Kosovo. Designed for low-altitude release, it had been modified for medium-level operations after the First Gulf War, but the results were not entirely satisfactory. In March 1999, no trials data were available to optimise the release profiles employed during Allied Force (when sticks of four bombs were normally dropped from 20,000ft), and both the accuracy and potency of RBL755 suffered as a result. According to another LI paper, 'RBL755 stick spacing was erratic [and] in some cases the pattern bracketed the target area rather than covering it. Also, the weapon impacted left of the aiming point.' Of the RBL755s released, only 38.5 per cent hit their aiming points, while 30 per cent missed; the accuracy of a further 31.5 per cent, assessed as 'unknown', was somewhat doubtful. Moreover, according to the same report, 'RBL755 has a very low PK against armour.'⁴⁷ Consequently, an Urgent Statement of User Requirements was raised for the procurement of the AGM-65 Maverick air-to-ground missile, which boasted a proven anti-armour capability. Trials were still in progress when hostilities ceased.

It is more difficult to assess the success rate of the free-fall 1,000lb bomb because the proportion of unknown results was significantly higher. Hence, only ten per cent of the 122 free-fall bombs dropped by the GR7s during Allied Force were recorded as hits (two per cent) or misses (eight per cent), while some 71 per cent of the 101 air-burst 1,000lb bombs released were categorised as 'misses' or 'unknown'. Results were often unknown because the bombs were released through cloud, but one LI report argued that 'the probability of weapon hit on a target is likely to be low' in such attacks, an assertion supported by some post-mission BDA. On 7 May, for example, seven GR7s released free-fall 1,000lb bombs through cloud against targets at Sjenica airfield in Southern Serbia – an attack of considerable magnitude judged by the standards achieved later in the month. BDA showed impact craters on the attack path beyond the target, but no bombs had hit their aiming points. To make matters worse, the air-burst 1,000lb bomb regularly malfunctioned. So many detonated prematurely that its use was temporarily suspended during the last week of May while the CBF(A) obtained assurances from PJHQ that a standard self-defence manoeuvre would ensure the safety of pilots if an air-burst 1,000lb bomb detonated on arming.

For all these reasons, then, it appears unlikely that GR7 operations in the KEZ were very effective in a purely tactical sense. This was in no way the fault of the GR7 pilots. Confronted by the unenviable duty of fulfilling a role that did not conform to RAF doctrine, with weapons that were not always well designed for the task, they demonstrated remarkable courage, determination and skill throughout Allied Force. But their efforts were frustrated by consistently poor weather and a shortage of targets. Better weather conditions might have improved their chances of targeting the FRY security forces. Alternatively, a NATO ground offensive – or the threat of one – might have compelled the VJ to deploy more concentrated formations in open territory, where they would have been far more vulnerable to air attack. However, in the absence of clear weather *and* a plausible NATO ground threat, all aircraft committed to KEZ operations faced an insuperable challenge.

When the weather permitted GR7 attacks on fixed military and transportation infrastructure targets with LGBs, they were more successful. Of the 126 Paveway II bombs released, 82 hit their aiming points – a hit rate of 65 per cent. Nevertheless, aircrew periodically questioned the reliability of both Paveway II and III. Some LGBs did not seem to guide properly and others apparently failed to arm. All three Paveway IIIs released during the operation missed their aiming points and two did not produce any signs of impact, while Paveway II appeared subject to guidance failure on 11, 12, 14, 15 and 21 May. Subsequent investigation did not suggest that either bomb was defective. Broken cloud or smoke in the target area sometimes prevented weapons from guiding accurately, but the chief problem was neither the performance nor the reliability of the TIALD-Paveway combination. Rather, it was the same lack of aircrew experience with laser-guided bombing that we have already noted at RAF Bruggen. The following table provides a full breakdown of the results achieved with each of the five types of weapon employed by the GR7s during Allied Force.

	Harrier GR7				
Weapon Type	PWIII	PWII	RBL755	1,000lb Free-Fall	1,000lb Airburst
Sorties Flown	6	180	489	113	179
Sorties Releasing	3	63	162	61	51
Weapons Flown and Assessed	6	317	1558	227	356
Weapons Ground Aborted Weather	0	14	89	25	33
Weapons Ground Aborted Other	0	20	73	5	48
Weapons Air Aborted Weather	3	59	57	7	3
Weapons Air Aborted Other	0	34	271	41	124
Hang-ups	0	4	5	7	1
Total Weapons Released	3	126	559	122	101
Hit Aimpoint	0	82	215	3	30
Missed Aimpoint	3	36	168	10	34
Unknown Result	0	8	176	109	37
Weapons Released – Hits	0%	65%	38%	2%	30%
Weapons Released – Misses	100%	29%	30%	8%	34%
Weapons Released Unknown	0%	6%	31%	89%	37%

As for the Solenzara-based Tornado GR1 detachment, regular tasking was received up to 12 June, but only three missions progressed beyond the planning stage. On the 4th, 31 Squadron GR1s received tasking to attack a radio relay station in western Serbia, but the mission was aborted in the air because of cloud in the target area. On the following day, the target assigned to 9(B) Squadron (which was near to Belgrade) was withdrawn on political grounds, and the majority of other GR1 missions were cancelled for similar reasons. As 9(B) Squadron's diarist recorded, 'Most targets were located around Belgrade, Novi Sad and Nis, and collateral damage envisaged from the attacks was considered too great a risk to the ongoing peace process.' The detachment's final mission, again flown by 31 Squadron, attacked four hardened aircraft shelters on Sjenica airfield on 7 June. All six GR1s were equipped with TIALD pods and a single Paveway III bomb, and two were carrying ALARM missiles. Four ALARMs were launched prior to the attack, and four bombers then dropped their LGBs.

On 9 June, the detachment's readiness state was reduced from six hours' notice to 12 hours and specific targets were no longer planned; offensive operations over the FRY were suspended the next day. The OC 9(B) Squadron then organised a training programme to allow aircrew to maintain their currency, which was initiated following 31 Squadron's return to Bruggen on the 11th. Deployed aircraft were re-roled into training fits, but the engineers remained ready to put them back into war configurations at short notice if circumstances so required. The 9(B) Squadron crews eventually returned to RAF Bruggen between the 22nd and 25th.

From 4 April through to their forward deployment to Corsica on 29 May, the GR1s flew 129 Allied Force sorties against individual aiming points. Analysis undertaken in the immediate aftermath of the conflict recorded that, of the bombs dropped, 95 were Paveway IIs and 17 Paveway IIIs. Of the Paveway IIs, 66 per cent landed on target; the equivalent figure for the Paveway III was 53 per cent.

	PWII	PWIII
Weapon Sorties Flown	98	29
Sorties Releasing Weapons	48	17
Total Weapons Flown	168	23
Total Weapons Released	95	17
Weapons - % Hit	66%	53%
Weapons - % Missed	34%	47%

These results were comparable to those observed during Operation Granby in 1991. However, Granby was the very first operation in which the RAF employed airborne laser designation in a live operational environment. The overall figures also concealed significant variations in the performance of different squadrons. The TIALD specialists of 14 Squadron achieved an overall hit rate of 68 per cent⁴⁸ during Operation Allied Force, whereas 31 Squadron's hit rate for the campaign was 53 per cent, and the two bombs released by 9(B) Squadron both missed their target. At least two 31 Squadron crews missed their aiming points on more than one occasion. The figures also reveal that neither 14 Squadron nor 31 Squadron succeeded in improving their accuracy during the operation.

The weather caused even greater difficulties for the GR1s than the Harriers. Unlike the Harrier GR7, the GR1 could not release free-fall bombs through cloud on to a GPS location and was entirely dependent on laser-guided bombing, which was impossible in cloudy conditions. A UOR to improve the GR1's 'blind' bombing through the use of GPS guidance was approved at the beginning of the operation but did not produce results until the end of May, and the capability was never tested operationally. A suggestion that the GR1s might attempt medium-level radar bombing was rejected on the grounds that this technique was insufficiently accurate.

The distance between Bruggen and the FRY rendered three distinct phases of each mission vulnerable to adverse weather. Local weather affected departures and recoveries, weather *en route* affected transit flying (a number of TIALD unserviceabilities were attributed to rain or icing during transit)⁴⁹ and AAR, and the weather in the target area affected the GR1s' ability to employ LGBs effectively from medium altitude. Consistently poor weather in one

or more of these domains prevented the GR1 detachment from launching operational sorties on all but 22 of the 56 days on which missions were tasked. Bruggen's distance from the FRY exacerbated the weather problem in other ways, too. Weather conditions in the target area could not be reliably predicted more than eight hours before the GR1s' scheduled time over target. Their long flight time to the theatre of operations dictated a mission planning and preparation cycle that began earlier than for units based in Italy, while the decision to cancel missions correspondingly occurred later in the cycle – often only shortly before the scheduled take-off time. Consequently, the GR1 detachment expended an enormous amount of nugatory effort on preparing for missions that were cancelled, and the assets committed to each mission could rarely be made available for alternative employment such as training.

While the two fast jet squadrons were withdrawn from operations over the Former Yugoslavia in June, the RAF's two E-3D squadrons continued to fly in support of NATO's Kosovo peace implementation mission, Operation Joint Guardian. Although there was a marked reduction in the tempo of airborne command and control flying, regular deployments to Aviano continued, and the E-3Ds had also to maintain a standby commitment from RAF Waddington. Thus, while they flew a total of 184 sorties during Allied Force, their ultimate flying effort over Kosovo was considerably greater. The Joint Guardian task was only completed at the end of 2001, by which time elements of the E-3D force had been committed to Operation Veritas in Afghanistan.

Conclusion

Operation Allied Force was launched after a protracted and fruitless search for a peaceful solution to the Kosovo crisis. From the early 1990s Kosovo was the subject of international monitoring missions and UNSCRs and of continuous diplomatic efforts to promote dialogue between the rival protagonists. The aim was to produce a workable settlement respecting the FRY's sovereignty and the human rights of Kosovo's Albanian majority. From the summer of 1998 these diplomatic initiatives were underpinned by military preparations. Nevertheless, NATO withdrew from the brink of military action in October in the genuine hope that the Holbrooke Agreement might succeed where so much else had failed, despite Milosevic's proven record of duplicity and his repeated refusal to honour international treaties and conventions.

Unfortunately, hopes of a lasting and peaceful settlement were dashed in the following months, a series of flagrant violations of the agreement by the FRY security forces culminating in the massacre at Racak in January. Racak convinced the US State Department of the necessity of adopting a very much tougher stance. At Rambouillet, the FRY and the KLA were therefore presented with a series of minimum terms for a settlement and these were backed by the threat of force in the event of non-compliance. For Milosevic, the Rambouillet demands were politically very difficult, if not impossible, to accept, yet his own refusal to honour the terms of the Holbrooke agreement or discuss the deployment of *any* international security presence in Kosovo contributed more to the failure of the diplomatic process and the eventual outbreak of hostilities.

It is only possible to speculate on his motives. Kosovo had played an immensely important part in his rise to power. He gained considerable support by championing the cause of the Serb minority there and probably saw continuing Serb domination of the province as crucial to his own political fortunes. After the break-up of Yugoslavia and (especially) the Bosnian war, he may have felt that any concessions over Kosovo would ultimately lead to its independence, despite Western assurances to the contrary. Clearly, from a purely domestic political perspective, he calculated that there was more to be gained from taking a hard line with the Kosovo Albanians than from dialogue and compromise.

Milosevic may similarly have expected to gain in political stature by taking a defiant stand against NATO. He could not have hoped to inflict a military defeat on the alliance, but he might have secured a political victory by exploiting what he judged to be NATO's lack of will and cohesion. He probably calculated that NATO expected him to capitulate almost immediately and had no stomach for a protracted military operation, let alone the refugee crisis that he would unleash by way of retribution, which would demonstrate to the world that the air campaign was totally counter-productive. A few days of bombing designed primarily to send signals might damage some important fixed military installations but posed little threat to military personnel or equipment, which could be dispersed, sheltered or concealed in the absence of a ground war. And, when it became clear that the FRY would not surrender without a more substantial campaign of longer duration, Milosevic may have anticipated that NATO would renew the search for a negotiated settlement. He could weather the storm without seriously imperilling his military machine and gain immense political capital from doing so.

NATO's position is better documented. The alliance's political and military leaders drew obvious conclusions from the war in Bosnia. To the West, it seemed certain that the Kosovo Albanians were to be subjected to the same forms of ethnic cleansing that the Bosnian Muslims had experienced, unless determined steps were taken to ensure their safety. Diplomatic measures were unlikely to succeed with Milosevic unless supported by the threat of force, but NATO was not willing to risk casualties over Kosovo and so ruled out a ground operation at an early stage in the planning process. An air campaign conducted at medium altitude without any losses had apparently brought the Serbs to the negotiating table in 1995 and might therefore do so again. Air power was also favoured because many of the required assets were already in theatre or could be deployed there quickly, whereas a ground force would have taken months to assemble. There was no formal UN mandate for military action against the FRY. The UN Secretary General himself believed that there was a strong case for intervention, but Russia would have blocked a UNSCR sanctioning the use of force in support of the Kosovo Albanians, so the Western powers fell back on the more contentious (but increasingly prevalent) argument that force was justified as an exceptional measure to avert a humanitarian catastrophe.

Western expectations of the air campaign were highly exaggerated in March 1999. The documents suggest that British ministers hoped the FRY would capitulate after only a few days of bombing, and NATO governments gave no detailed consideration to the potential consequences of the air campaign's failure, despite mounting evidence that Milosevic was planning to respond by intensifying his military operations in Kosovo. Yet NATO's offensive force was too small and its target list too restricted for the initial assault to achieve much coercive impact. Without long-term plans, the alliance was easily diverted from its original strategy by the FRY's onslaught against the Kosovo Albanians, and a substantial proportion of Operation Allied Force's offensive effort was subsequently directed against the KEZ for two reasons. First, SACEUR preferred KEZ attacks to operations against other target categories; second, there was strong political pressure to conduct KEZ operations in response to the refugee crisis and the ethnic cleansing that accompanied it. KEZ operations were also thought to involve only a low risk of collateral damage. On this basis, they were permitted in overcast weather conditions and made subject to target-clearance procedures more liberal than those applied during missions over the Serb heartland.

Unfortunately, KEZ attacks proved very ineffective. Difficult enough to hit from 15,000 feet, the FRY ground forces were also dispersed and highly competent in the art of passive air defence. If other constraints are considered – the need to avoid collateral damage and operate within short SEAD windows, for example – it will be appreciated that NATO aircrews flying over Kosovo were confronted by a particularly challenging task. NATO BDA figures compiled in September 1999 illustrate just how low the return on KEZ operations was; they also reveal that even the discouraging preliminary assessments prepared by the CAOC during the war were over-optimistic.

A	B	C	D	E	F
Equipment Type	Preliminary Assessment	Successful Strikes	Multiple Hits	Decoys	Total (C+D+E)
Tanks	110	93	19	9	121
APCs	210	153	26	5	184
Artillery	449	389	46	6	441
Total	769	635	91	20	746

The air campaign's obvious shortcomings produced sharp disagreements within the NATO command chain. In the CAOC, Lieutenant General Short and his staff identified SACEUR as the main source of their difficulties without always realising the pressures that were being brought to bear on him from the strategic level. Although they tried repeatedly to demonstrate how uneconomic KEZ operations were, their arguments had no perceptible effect until the last week of May, when Short finally persuaded SACEUR to increase the proportion of bombing effort devoted to strategic targets in Serbia. SACEUR in turn sought broader NATO support for this revised strategy, but there were immediate objections from France, Germany and even the UK, which were unresolved at the end of Operation Allied Force.

Nevertheless, these disputes should not be allowed to overshadow such successes as the air campaign achieved. Attacks against both military and civil infrastructure targets were far more effective than KEZ operations and there were clear signs during May that the bombing was undermining the morale of the FRY security forces and the country's will to fight. Improved weather during the final week of the month allowed NATO almost to double its

offensive effort, and it might well have been possible to sustain this higher sortie rate with clear conditions more likely to prevail during June and July – a fact that would not have been lost on Milosevic. CDI's final campaign analysis recorded on 7 June:

NATO looks more likely to achieve the explicit aims set at the start of the conflict. Within the FRY there are signs of resentment amongst the civilian population towards the leadership at having involved the country in an unnecessary and costly conflict. Rationing and disruptions to power and water have taken their toll on civilian morale. Similarly, as FRY forces operating in Kosovo continue to be degraded, signs of fissures in their morale and their ability to conduct all arms warfare are becoming more apparent.

More generally, through the air campaign, NATO ultimately regained the initiative over Kosovo and maintained a united front in opposition to the FRY, succeeding precisely where Milosevic expected it to fail. Moreover, while the alliance could at least respond to FRY actions against the Kosovo Albanians through air strikes, Milosevic had no means of countering the air campaign. By precipitating the refugee crisis, he played his final military card; thereafter, he could only hope that NATO might halt the bombing to allow further negotiations. But Allied Force became NATO's irreducible minimum: it could not be paused, moderated or even discussed until Milosevic accepted the demands of the international community, ceased the repression in Kosovo and withdrew his troops. Until then, the Yugoslav leader faced the prospect of an indefinite, intensifying and insuperable aerial bombardment, something that extended far beyond his initial expectations and left him in a position from which it was impossible to emerge victorious.

The importance of the air campaign in his thinking was amply demonstrated by his repeated efforts to have it stopped, notably during the final negotiations at Kumanovo. On that occasion, his emissaries tried to obtain a halt to the bombing following a 'demonstration of intent' to withdraw, leaving the actual withdrawal to take place over weeks or even months, if at all. The renewal of more intensive bombing after the talks broke down quickly brought the FRY back to the negotiating table and helped to persuade Milosevic to accept the MTA.

Hence there is at least some tangible evidence to suggest that the air campaign played an important part in Milosevic's defeat. By contrast, claims that the decisive factor in his

capitulation was the threat of a NATO ground campaign appear to be unfounded. Among the leading NATO members, only the UK accepted the need to prepare for an opposed ground entry into Kosovo as part of a joint air and ground operation. Throughout the Kosovo conflict, the Prime Minister and the Secretary of State for Defence struggled to persuade the all-important close allies that an opposed ground campaign should be considered, but President Clinton never sanctioned anything that went beyond what was vaguely termed 'planning'. How little that really meant was all too graphically revealed when, at the beginning of June, the US military finally inspected NATO's preliminary plans for a ground operation and found them to be logistically unsustainable. Like Clinton, the US Secretary of Defence, William Cohen, was implacably opposed to a ground operation, as were the French and German governments. By the time Milosevic finally conceded defeat, there was no practical possibility of launching an opposed ground campaign before the onset of winter in Kosovo. The presence in Macedonia of a mere 15,000 NATO troops deployed for peacekeeping and humanitarian duties can hardly have exerted much coercive effect on the Yugoslav leader.

Air power rather than land power was militarily decisive in Allied Force, yet the operation was primarily a victory for air power and diplomacy combined rather than air power alone. From a diplomatic perspective, the FRY was particularly vulnerable over Kosovo. Belgrade's resistance to the demands of the international community was critically dependent on the moral – if not material – support of Russia, but Russia's need for Western economic and financial assistance made her an unreliable ally. Western leaders therefore set out to coax her closer to their position, skilfully employing the full range of international organisations to achieve their objectives. Unable to advance their cause through NATO itself, instead they secured a joint declaration of principles for the resolution of the conflict under the auspices of the G8 barely one month before it met to consider an enormous package of financial aid for Russia. The statement proposed a UN-sponsored settlement of the crisis even if it did not detail the precise form that such a settlement would take. In its aftermath, President Ahtisaari was recruited to represent yet another organisation – the EU. Together with Chernomyrdin, he was to play a crucial role in turning the G8 principles into a workable agreement.

However, it was not the Ahtisaari-Chernomyrdin peace initiative to Belgrade at the beginning of June 1999 that caused Milosevic to capitulate. Rather, the documents clearly show that their initiative was launched *because* the FRY leader signified his willingness to accept the

G8's terms. Thereafter, Ahtisaari secured the concurrence first of Chernomyrdin and then of Milosevic to a formal peace document by papering over remaining areas of disagreement or concealing them behind broad generalisations. But such methods inevitably caused important differences to emerge when the FRY was presented with the first draft MTA, which could only be resolved through the medium of a supporting UNSCR. The SCR offered hardly any tangible concessions to the FRY but was worded in a manner that allowed Milosevic to claim publicly that it did, distorting its precise meaning in the process. In reality, it delivered absolute victory into NATO's hands.

The British government was strangely isolated in NATO's strategic debate on Kosovo. Although the UK was a key force contributor and a member of the all-important inner circle of close allies, the Blair administration harboured clear reservations over the strategy pursued during the crisis. The UK's isolation stemmed from causes both political and military. Politically, the UK priority was to safeguard the future of NATO, which might have been imperilled if Allied Force failed to defeat Milosevic. Militarily, most senior British airmen doubted that the air campaign could protect the Kosovo Albanians and believed instead in the necessity of a joint air and ground operation in which air power prepared the battlespace for a land offensive, while the threat of ground action fixed FRY forces in position, allowing them to be targeted effectively from the air. Their outlook was shared by CDS and was adopted by the government once it became clear that the Kosovo crisis was unlikely to be resolved without protracted hostilities.

Yet the other close allies rejected the concept primarily because of their unwillingness to consider an opposed ground operation in Kosovo. Clearly, there are lessons to be drawn from the UK's experience that will for long be relevant to the launch of joint and coalition operations. The political concern to keep costs and casualties to the absolute minimum will remain a significant factor in determining how best to conduct military ventures in non-permissive environments, underlining the case for employing only a 'light footprint' on the ground and a substantial air component.

At the operational level, the RAF's offensive contribution during Allied Force can be considered a success in so far as it contributed directly to the attainment of NATO's declared objective – the withdrawal of FRY forces from Kosovo. At the tactical level, assessments of success in the campaign seem to have been measured as much in terms of effort expended

as results achieved. On this basis, the Harrier GR7s established and sustained an impressive offensive air effort from the very beginning of the campaign until Belgrade acceded to the demands of the international community, operating flexibly during KEZ missions and LGB attacks against the FRY's military and transportation infrastructure. By contrast, the Tornado GR1s played a more intermittent role primarily because they were less capable of operating in adverse weather conditions. Their task was also far more difficult because they had to fly significantly further to reach the target area, depend more heavily on AAR, and expose themselves for longer periods to the FRY's very capable ground-based air defence systems. They nevertheless provided a potent striking force throughout much of the operation when the weather permitted.

Neither the GR7 detachment nor the Bruggen GR1s suffered any casualties – an important objective for all NATO powers – and their bombing was at least as accurate as in most previous operations when comparable weaponry was employed. They both contributed to the degradation of the FRY's air defence system and military infrastructure, and the disruption of transport and communications links between Serbia and Kosovo. Additionally, the GR7 KEZ missions helped to impose constraints on the ability of the FRY's security forces to pursue their operations against the KLA and the Kosovo Albanians, forcing them to disperse or conceal fielded troops and weaponry. This was achieved within exceptionally strict ROE designed to reduce the risk of collateral damage to the absolute minimum.

In the aftermath of the conflict, a British Weapons Effectiveness Team (WET) visited several locations bombed by the GR1s and GR7s in an attempt to determine the physical impact of their attacks more precisely. The team's assessments were somewhat tentative, for some of the locations they inspected had been targeted on a number of occasions by other NATO aircraft. It was also difficult for the WET to draw any firm conclusions about the GR7s' KEZ missions, for it was unable to find any VJ or MUP vehicles or equipment at the target sites, despite clear evidence of military activity at most of them. The team could only postulate that damaged vehicles and equipment might have been removed by the FRY armed forces.

Despite these caveats, the WET's final report produced some encouraging conclusions. Of seven bridges bombed by the RAF, four had been rendered unusable. In three of these instances, long detours would have been required to effect the necessary crossings; a makeshift replacement bridge had been constructed to bypass the fourth. Damage inflicted

by the air attacks had been successfully over-bridged in two instances, and one bridge had remained usable. Three out of six reinforced concrete-framed buildings had been destroyed, while two continued to offer some shelter and one remained usable. Six out of seven steel-framed buildings had been damaged beyond use, only one being considered easily repairable, and six out of seven non-framed buildings likewise suffered total loss of function. The RAF had also contributed to the destruction of two communications sites examined by the WET.

From an engineering perspective, too, both detachments performed very creditably. In March, for example, a serviceability rate of 100 per cent was achieved at Gioia del Colle, while the rate still exceeded more than 90 per cent in April, when more GR7s were involved and flying was more intensive. This may be compared with an average peacetime serviceability rate across the entire Harrier fleet (recorded in 1996) or 63.3 per cent. Engineers from 1(F) Squadron were reinforced from 20(R) Squadron and from RAF Wittering and maintained two daily 12-hour shifts throughout the operation. At Bruggen, on average, ten out of the 12 operational GR1s were available for each planned mission, and the required number of aircraft launched for the operational missions on all but one occasion. No 14 Squadron's manpower resources proved sufficient to support the two-month campaign and could easily be augmented if necessary. When aircraft incurred long-term unserviceabilities, they could be substituted from among the four spares.

The achievement, then, was impressive. Nevertheless, in a tactical context, Allied Force was by no means an unqualified triumph, and the difficulties that confronted the two RAF detachments shed important light on the broader narrative of the Kosovo air campaign. At the end of the war, the RAF recognised that the GR7 required better anti-armour munitions for medium-level operations against ground forces. Furthermore, a significantly improved ISTAR capability was needed if air power was to be employed effectively against concealed or highly dispersed enemy units. The Secretary of State for Defence therefore decided to continue with the trial of Maverick on the basis that it might be purchased in addition to the planned Brimstone anti-armour missile, the capabilities of the two weapons being complementary. The all-weather Airborne Stand Off Radar – ASTOR – aircraft,⁵⁰ already ordered for the RAF, was expected to provide an important augmentation to existing ISTAR capabilities, but the MOD also acknowledged the need for fast 'sensor-to-shooter'

communications and data links to enable more rapid communication between intelligence-gathering assets and combat aircraft.

Throughout the air campaign, poor weather imposed acute limitations on the RAF's precision-guided bombing capability. In the GR1s' case, the cancellation of nearly 60 per cent of tasked missions on weather grounds was particularly troubling. The GR7s flew more regularly, but poor weather or cloud cover likewise prevented them from employing LGBs, and their task was only sustained through the use of less accurate or effective munitions like RBL755 and unguided 1,000lb bombs. Even the carriage of these weapons did not by any means guarantee that a mission would not be cancelled or aborted. In May 1999, the Deputy CBF(A), Group Captain Routledge, was asked by the Director of the Royal United Services Institution: 'If you were granted one piece of equipment, what would it be?' He replied, 'An F-15E with an all-weather PGM capability.'

But even when clear conditions allowed LGB strikes to proceed, the results were not entirely satisfactory. The published Kosovo lessons report took a sanguine view of LGB accuracy during the operation:

Our experience in the Gulf War had demonstrated the need for precision attack capabilities, and the extent to which we have improved our capabilities in this field was proved in Operation DESERT FOX, the operation against Iraq in December 1998. Building on this success, Kosovo was one of the most accurate air operations ever mounted.⁵¹

And yet 'accuracy', in this sense, again implied the avoidance of collateral damage rather than the delivery of weapons on to their targets. Employing this latter criterion, the RAF drew more measured conclusions.

To help explain the absence of any marked increase in bombing accuracy between the Gulf War and Operation Allied Force, the Kosovo Lessons Team within HQ STC prepared a historical survey of laser-guided bombing in the RAF. The survey demonstrated unequivocally that the lack of improvement between 1991 and 1999 resulted from inadequate training. In almost every live action since the first operational use of LGBs during the Falklands War, some RAF crews had been required to employ these weapons with

hardly any previous experience. Where Allied Force was concerned, 'a number of crews in the early days released their first ever LGBs on a war sortie, which was only their second or third TIALD sortie.' The overall Paveway II hit rate of 65 per cent (encompassing both the GR1s and the GR7s) concealed the fact that experienced crews had achieved a hit rate of 85 per cent during the operation while inexperienced crews could only manage 55 per cent.

Inadequate training resulted in part from a shortage of TIALD pods, most pods being permanently committed to the various overseas deployments undertaken during the 1990s, or to trials, in part from a desire to conserve limited stocks of expensive weaponry, and in part from an absence of suitable bombing ranges. The problem was even more pronounced where Paveway III was concerned and was aggravated by the greater complexity and sensitivity of the weapon and poor accompanying documentation. By 1999, the RAF was taking limited steps to procure more TIALD pods and allocate greater numbers of LGBs for training purposes, but war broke out over Kosovo before these measures could take effect.

Clearly, then, there were several lessons to be drawn from Operation Allied Force where precision-guided bombing was concerned. First, the RAF urgently required an all-weather PGM incorporating GPS guidance, and needed to procure such a munition in quantity, ensuring adequate provision for aircrew training. In the interim, to improve the standard of laser-guided bombing, the RAF required more TIALD pods and an increased supply of LGBs for training purposes, as well as more regular access to ranges. Finally, the system by which particular squadrons specialised in precision-guided bombing was no longer viable; such key capabilities were required across a higher proportion of the strike/attack and offensive support forces if operations on the scale of Allied Force were to be sustained.

Little attention had been paid to these issues before Allied Force. By contrast some of the other lessons identified during the Kosovo conflict had a long pedigree. During the Gulf War of 1991, interoperability between the RAF and the USAF was impeded by the fact that British aircraft were not equipped with secure communications. RAF Tornado F-3s were, for example, unable to receive much of the real-time intelligence that was supplied by airborne command and control aircraft to US fighters. Eight years later, little had changed. American air assets alone were equipped with secure voice radios, and any combined force packages had to work in clear voice. FRY communications intelligence could literally eavesdrop on NATO pilots speaking to one another as they approached their targets – an advance warning

that undoubtedly reduced the effectiveness of many attacks and increased the vulnerability of NATO aircraft to interception.

Understandably, US crews often opted to work in secure voice, denying vital tactical information to their allies. According to one lessons report, 'US ELINT assets that were in-place to help Tornado GR1 missions were very reluctant to transmit information by insecure means, and there were numerous occasions when Tornado GR1 crews were denied high-grade ELINT due to their lack of secure voice radio.' In March 2000, the Secretary of State for Defence acknowledged the critical importance of secure communications and announced that priority action was being taken to trial appropriate equipment in several RAF aircraft.

Further problems arose from the fact that both the GR1 and GR7 EW systems were optimised for legacy Cold War low-level tactical scenarios rather than the medium-altitude flying. Yet their adaptation would have involved some fundamental redesign at very significant cost. Following the First Gulf War, a 1-star Electronic Warfare Action Group had been formed to address the operational shortcomings of British EW equipment, but it was unable to secure sufficient funding for its proposals; it was finally dissolved in 1998 having failed to achieve any significant progress. Hence RAF combat aircraft were not much better equipped for EW in 1999 than in 1991. GR7 and GR1 missions were compelled to fly with dedicated spotter escorts and were entirely dependent on US support in the form of EA-6Bs and EC-130s. As the same lessons report put it, 'Without US EW support the RAF would not be able to carry out ML⁵² ops against even a single digit⁵³ IADS.' The need for an effective missile approach warning system was deemed particularly acute.

Finally, the RAF's SEAD contribution to Allied Force was extremely limited despite the substantial sums spent on purchasing ALARM and on training dedicated squadrons to use it. Instead, SEAD was largely provided by the USAF. RAF Bruggen's ALARM specialists were bewildered by the restrictions imposed on the missile's use and subsequently recommended that 'An appraisal of ALARM employment should be effected to ensure that all elements of the tasking chain are aware of the weapons system's capabilities.' But the MOD's pronouncements were more cautious and emphasised the link between SEAD and ISTAR. 'A significantly increased [SEAD] capability could be achieved by improved

Intelligence, Surveillance and Reconnaissance and better sensor-to-shooter links ... rather than by buying more SEAD-capable aircraft to ensure that all sorties are escorted.'

In summary, it is probably fair to conclude that the RAF projected a superior offensive capability at the beginning of Operation Allied Force in 1999 than it did when hostilities broke out in the Gulf in 1991. It was better equipped for precision-guided bombing if not much better trained, and it was better trained to operate at medium level if not always better equipped. Nevertheless, the Kosovo air campaign also drew attention to some important limitations affecting the Harrier GR7s and the Tornado GR1s to a greater or lesser extent. The RAF urgently required more capable ground-attack weapons and it needed a PGM that could be dropped through cloud, as well as improved training in the employment of PGMs. No less essential was the procurement of secure air-to-air communications equipment and EW equipment that functioned more effectively at medium level. Future provisions for SEAD needed clarification, and more robust ISTAR capabilities were essential. Some of the RAF's shortcomings in these areas dated back many years and had been identified in the aftermath of earlier operations. However, in the absence of sufficient funding or political will, or both, no remedial action had been taken.

As for the E-3D detachment, it fulfilled exceptionally intensive tasking in Allied Force, managing air operations of enormous scale and complexity. Apart from playing a pivotal role, in the offensive air campaign, RAF E-3Ds were instrumental in the destruction of three Serbian MiG 29s and the rescue of a downed F-117 pilot. Their crews quickly established a reputation for professionalism and efficiency that was reflected in their near-continuous assignment to the challenging southern orbit known as Pluto. Yet the achievement was also remarkable in so far as the E-3D platform was chiefly designed for advance warning rather than airborne command and control, and this factor loomed large in subsequent analysis. The official air lessons study insisted that the nature of modern warfare required the E-3D to field a full AWACS capability: 'The E-3D urgently needs additional consoles, radios and crews to allow it to support the full range of air operations.' Over the next few years, the RAF implemented several enhancements to the aircraft, installing better communications and the Joint Tactical Information Distribution System (JTIDS), also known as Link 16, and making improved provision for the enlarged weapons control teams first employed over Kosovo.

General Conclusion

In 1998, the Strategic Defence Review sought to define broadly what might be expected of UK defence over the following years. That the predictions proved less than accurate is not so much a criticism of the review as an acknowledgement that the frequency, nature and duration of post-Cold War conflicts was extremely difficult to predict. The assumptions laid down in SDR were not set in stone, and many other considerations influenced British strategy in the period covered by this book. Their combination led to an intensified pattern of conflict under the Blair administrations. A common factor where Bolton (including Desert Fox) and Kosovo were concerned was the use of the threat of force to support diplomacy. The actual employment of force is inherent in this approach, after all other options have been exhausted, and a failure to take military action can only reduce the plausibility and effectiveness of the threat in future. It may also create difficulties in the sphere of alliance cohesion and solidarity.

This is not to suggest that there can be hard and fast rules for confronting 'pariah' states. The experience of Bolton and Kosovo lends weight to the argument that a broad base of international support may be preferable to narrower coalitions, but neither scenario provides much room for manoeuvre, and the range of options open to the government in 1998-99 should not be overestimated. There was no realistic alternative to UK alignment with the United States during the UNSCOM crisis or with NATO over Kosovo. Alternative UN-based strategies were never viable; neither Desert Fox nor the Kosovo air campaign were specifically sanctioned by the UN.

While SDR envisaged fewer concurrent operations than were actually mounted, it also exaggerated the potential for 'jointery' in the late 1990s. This is not hard to explain. The essence of jointery is the deployment of the correct force mix – the combination of air, land and maritime forces that is most likely to deliver the operational objective quickly and effectively. The underlying principle is that joint effects are greater than the sum of the effects that can be brought to bear by each individual component. Where national operations are involved, this may not pose much difficulty. In coalition warfare it can prove significantly harder for the simple reason that key allies are almost certain to have different perspectives and priorities. In the case of Iraq, the UK and the US were agreed during the Bolton period that their objectives could be delivered by air power (including maritime air power) and

diplomacy alone, and this judgement on Iraqi operations was only changed by the events of 11 September 2001. However, the UK argument – supported by the most senior Army and RAF officers – that a joint air and ground operation was required in Kosovo received no support from Washington or other alliance capitals, and this effectively dictated that the campaign against the FRY would be fought in a single dimension. The case for mounting or threatening a ground operation might have been a strong one, but it was not sufficiently persuasive to overcome the two basic objections that confronted British statesmen in 1999: ground operations are very expensive and may well involve heavy casualties. Again, this calculation was only changed by the emergence of a strategic threat to the US and other western nations after the turn of the century.

The doctrinal impact of the two operations was limited. Although the RAF produced an extensive lessons study of air operations over Kosovo, no equivalent air lessons report was ever prepared on Bolton or the broader subject of the UK contribution to Southern Watch (or the other NFZs). In the third edition of AP 3000, which appeared in 1999, the experience of Operation Bolton undoubtedly influenced coverage of such topics as preventative diplomacy, peace enforcement and coercion.⁵⁴ AWC operations doctrine likewise continued to acknowledge the utility of air power as an instrument of crisis management.⁵⁵ Coverage of particular air roles such as surveillance and reconnaissance was also directly applicable to the Bolton task. And yet, although they accounted for so much of the RAF's operational activity in the 1990s, NFZ operations and associated subjects such as air policing and containment received hardly any attention, and UK air doctrine continued to view anti-surface force operations in the context of joint campaigns executed in support of conventional western ground forces. This perspective mirrored the stance of senior British airmen during the Kosovo conflict, as we have seen. It would subsequently be reinforced by the greater emphasis on air-land integration that characterised the era of Operation Telic and Operation Herrick. For this reason, neither Operation Ellamy (Libya, 2011) nor Operation Shader (Iraq and Syria, 2014 and ongoing at the time of writing) aligned closely with RAF doctrinal expectations. The recently renewed preference for air-based intervention without a significant western ground presence suggests that both Bolton and Kosovo had a longer-term significance that escaped the authors of successive doctrine papers.

Between them, Bolton and Kosovo provided rather different experiences of the so-called 'special relationship' between the UK and the United States. Predictably, the UK exercised

a more prominent role in the narrowly based Gulf coalition than in the NATO alliance, with its 19 member states. Equally, in the Gulf, the USAF exercised a considerable degree of independence and ran southern Iraqi operations along lines fully supported by the RAF. By contrast, in Kosovo, campaign management was rendered infinitely more complicated by SACEUR's direct involvement, as well as close political supervision. At first, given the intimate Anglo-US association that had developed in the Gulf, some RAF officers were unprepared for this situation, but they adapted quickly. It transpired that there was still scope for the RAF to exert considerable influence by, for example, securing key positions in the CAOC or through informal engagement at higher command levels. Both operations revealed challenges in the area of interoperability that were perhaps less surprising but reinforced the familiar argument that a significant long-term investment in air capability would remain essential if the RAF was to continue fighting alongside the USAF.

The UK's new C2 provisions functioned effectively during Bolton and Kosovo. The RAF's lessons study on Allied Force praised the 'uncomplicated' national C2 structure extending from PJHQ to CBF1(A) to unit level, describing it as 'simple and effective'. A lack of interference from other headquarters was also noted. The only reservation expressed in the report was that, on occasion, more direct links between the CBF1(A) and HQ STC might have been beneficial – particularly where the delivery of air capability was concerned. It was suggested that PJHQ might 'consider how best to interface the NCC with the Supporting Command, without prejudice to the C2 chain'. The two operations nevertheless raised questions about how the RAF contributes to the application of UK air power that remain under discussion to this day. Prior to the restructuring of the MOD in the early 1980s, it was still possible for CAS to exercise a considerable influence upon the employment of air power during operations. Subsequently, although the authority of the individual Chiefs of Staff waned, HQ STC's role as a joint operational headquarters preserved the RAF's influence when British forces were committed to the Gulf in 1990 at a time when CDS was himself an RAF officer. The establishment of PJHQ in 1996 altered this situation decisively, dictating that operational C2 from CDS downwards would function on joint lines. Ironically, the RAF's role in the exercise of operational air C2 diminished considerably at a time when independent air operations were being conducted in the Gulf and over the Former Yugoslavia. From then on, the likely effect of employing air power (or threatening to employ it) would be calculated by senior officers from all three services and by ministers and officials from more than one department of state. The flaws inherent in such a system are obvious.

If air is to play a central role in military operations, as it did in Bolton and Kosovo, its employment should be guided by professional air expertise.

Overstretch was a factor in the Bolton and Kosovo operations. The combined effects of defence cuts and increased operational commitments were complicated by the Tornado GR1 upgrade programme. To alleviate the burden on the GR1 force, commitments had to be spread across other aircraft fleets, but this created different 'pinch-points', notably in the supply of TIALD pods and in training for laser-guided bombing across the RAF's ground-attack squadrons. There were two basic consequences: the first was an average LGB hit rate that was lower than expected; the second was that the Tornado GR1s were tied to Bruggen during Allied Force and paid a very heavy price in terms of aborted or cancelled missions. None of this reflects very favourably on the management of defence or foreign policy under Conservative and Labour administrations throughout the 1990s. The simple, unavoidable truth is that if the British armed forces launched a weapon against an adversary in this period, it was likely to be a Paveway II LGB. It was thus a munition of genuinely strategic significance, and this should have been reflected in defence expenditure and resource allocation.

Similarly, if the UK was to engage repeatedly in air operations that involved highly complex packages of combat and combat-support aircraft flying over or near hostile airspace, the RAF needed the E-3D to be better equipped with the full range of AWACS capabilities – advance warning *and* airborne C2 – despite the costs involved. Instead, successive governments were too inclined towards the view that they could have their cake and eat it: they could realise draconian cuts in defence spending without jeopardising the maintenance of critical capabilities. There is ample evidence within these pages to demonstrate that this assumption was mistaken.

What did air power deliver in Bolton and Kosovo? There is no very straightforward answer. Assessment is a fundamental part of the operational planning cycle, but much remains unknown about the effects of bombing in Iraq and the FRY. It is important to remember that air power was not used in isolation in either theatre. It was employed to support diplomacy, and one important parallel may be noted in this regard: diplomatic pressure backed by air power secured the MOU with Iraq in February 1998 and the Holbrooke Agreement over Kosovo in October. Beyond this, in Iraq, air power destroyed what remained of Saddam

Hussein's WMD programmes and supported the strategy of containment pursued by the US and the UK between 1999 and 2003. It is now broadly accepted that this period did not witness any attempts to restore WMD capabilities, and Iraq also ceased to pose a significant threat to neighbouring countries. To that extent, air power delivered, but this was not fully appreciated until Saddam's regime was overthrown in 2003.

The role of air power in Kosovo has proved more contentious. This is chiefly because of the tendency for assessment to be focused on the tactical level – on the physical destruction of the VJ and MUP or the disruption of their activities. The difficulties that this involved have been described in detail and require no further consideration here. There is no doubt that air power would have been more effective in a tactical sense if Serb forces had been fixed in position by the threat of a NATO ground offensive, but no threat was presented. However, at the operational level, air power and diplomacy were effectively combined to secure the withdrawal of Serb security forces. They may not always be so well coordinated, but they secured NATO's objectives in 1999.

ANNEX A. BRIEF ON OPERATION INGLETON, JANUARY 1993

D/DAO/01/10/2/14/2 Pt B

Briefing paper attached to D/Sec (O) (C)/2/34/5 dated 25 Jan 93

Op INGLETON: Background

1. There was an increasing number of Iraqi air incursions into the no-fly zone south of the 32nd parallel late in Dec 92 and in Jan this year. Iraq also moved a number of SA-2 and SA3 SAM systems south of the 32nd parallel. These were in addition to SAM systems which had been located at Basrah before the no fly zone was established and which the coalition had tacitly accepted, provided they did not illuminate coalition aircraft with fire control radars, or commit other hostile acts. The new SAM systems were configured to form a 'killing box' into which coalition aircraft might be lured.
2. On 6 January the US, UK, France and Russia made a démarche to the Iraqis at the UN in New York, demanding that they cease the air incursions and that they return the recently introduced SAM systems to their previous locations and configurations by 2215Z on 8 January. The demarche stated that failure to comply with either demand would lead to an appropriate and decisive response from the coalition, without further warning.
3. Iraq responded by moving SAM systems away from the 'killing box' and removing its military aircraft from bases near the 32nd parallel. While it appeared at first that this could amount to compliance with the demarche, the destinations of the SAM systems were unknown and the aircraft could, of course, be quickly redeployed to more threatening locations. The coalition response was, therefore, cautious while surveillance continued.
4. It became clear that some of the SAM systems referred to in the 6 Jan démarche remained south of the 32nd parallel. For example, evidence emerged on 11 Jan that the Iraqis had deployed a SA-3 SAM system to a new location at Tallil air base, south of the 32nd parallel. Other missile systems in the area were placed on an operational footing. This activity was in defiance of the démarche, demonstrated hostile Iraqi intent and represented a renewed threat to coalition aircraft patrolling the no fly zone. The Attorney General was satisfied that

an attack against SAM systems and associated command and control installations in southern Iraq would be justified as action taken in self-defence, to protect coalition aircraft.

5. Coalition operations against Iraqi air defences took place on 13 and 18 Jan. The targets allocated to the RAF were the command and control facilities at Al Amarah and An Najaf. Tornado GR1 aircraft using TIALD and 1,000lb laser guided bombs inflicted severe damage at both locations. In the attack at An Najaf, the first bomber could not properly identify the target and did not release its weapons to avoid the possibility of collateral damage. The second bomber successfully attacked the target. Following the coalition attacks the air defence network in southern Iraq has been significantly degraded.

6. On 19 Jan the Iraqis announced a unilateral ceasefire and announced acceptance of the UN's term for UNSCOM flights. In the meantime they had ceased incursions and removed their police posts from the DMZ on the border with Kuwait. Since then there have been a number of incidents involving illumination of coalition aircraft by Iraqi radars and Anti-Aircraft Artillery fire. US aircraft have responded on some occasions with HARM missiles and cluster bombs. Despite these incidents the Iraqis appear keen to avoid a resumption of hostilities. However, the disposition of their air defence assets may be a cause for further concern and we are monitoring the situation closely.

ANNEX B. TORNADO GR1 SORTIES DURING OPERATION DESERT FOX

Take-Off Date (Dec 98)	Target	Weapons	Result
17	Perfect Patch control van, Shuaybah, SA2 site	2 x PW2	2 hits
17	Spoon Rest radar, Shuaybah SA2 site	2 x PW2	Aborted, TIALD failure
17	Communications mast, Rumaylah radio relay site	2 x PW2	2 hits
17	Communications building, Rumaylah radio relay site	2 x PW2	Miss (hit wrong DPI)
17	L-29 UAV hangar, Tallil air base	3 x PW2	3 hits
17	Hardened aircraft shelter, Tallil air base	3 x PW2	3 hits
17	Radio relay control building, Tallil air base	2 x PW2	2 hits
17	Communications mast, Tallil air base	2 x PW2	1 hit, 1 miss
17	23 Mech Inf battalion HQ building, Al Kut	2 x PW2	Miss
17	3 Mech Inf battalion HQ building, Al Kut	2 x PW2	Miss
17	17 RGFC Armd brigade HQ building, Al Kut	2 x PW2	Miss (hit wrong DPI)
17	1 Mech Inf battalion HQ building, Al Kut	2 x PW2	Miss
18	Low Blow radar, Tallil air base	2 x PW2	1 miss (near - BDA showed light damage), 1 miss
18	Perfect Patch control van, Tallil air base	2 x PW2	Miss

18	Air defence command building, Tallil air base	2 x PW2	1 miss (near - target damaged), 1 miss
18	HQ building, Tallil air base	2 x PW2	2 hits
18	Maintenance building, Al Kut	2 x PW2	2 hits
18	Maintenance building, Al Kut	2 x PW2	Miss
18	Maintenance building, Al Kut	2 x PW2	2 hits
18	Maintenance building, Al Kut	2 x PW2	1 hit, 1 miss
18 (on target on 19 Dec)	Battalion HQ building, Al Kut	2 x PW2	Miss
18 (on target on 19 Dec)	HQ building, Al Kut	2 x PW2	Miss (wrong DPI)
18 (on target on 19 Dec)	Tank storage building, Al Kut	2 x PW2	1 hit, 1 miss
18 (on target on 19 Dec)	Tank storage building, Al Kut barracks	2 x PW2	2 hits
19	Low blow radar, Al Kut SAM site	1 x PW3	Miss
19	Perfect Patch van, Al Kut SAM site	1 x PW3	2 hits
19	Brigade HQ building, Al Kut barracks	1 x PW3	2 hits
19	Battalion HQ building, Al Kut	1 x PW3	2 hits

**ANNEX C. 101 SQUADRON VC10 OPERATIONS FROM MUHARRAQ, BAHRAIN,
OCTOBER 1997-September 1998**

Month	Sorties	Hrs. mins	Fuel Dispensed (Tonnes)	VC10s in Theatre	Receivers			
					GB	US	FR	Total
Oct 1997	19	64.10	390.7	1	57	14	13	84
Nov	23	76.50	443.1	2 (From 17 Nov)	74	11	2	87
Dec	27	100.20	522.5	2	62	46	23	131
Jan 1998	43	113.40	572.5	2	101	71	14	186
Feb	73	238.55	1061.4	3 (From 6 Feb)	345	75		420
Mar	60	168.15	789.4	3	231	32		263
Apr	31	94.25	417.1	2 (From 19 Apr)	119	25		144
May	28	94.15	461.9	2	93	23	1	117
June	28	92.55	594.5	2	88	20	12	120
Jul	26	84.35	510.4	2	89	6	8	103
Aug	21	74.55	353.7	2	65	2	2	69
Sep	25	86.40	453.5	2	87			87
Oct	26	93.55	463.5	2	89	8		97
Nov	23	82.45	467.8	2	87	13		100
Dec	25	90.15	394.5	2	76	23		99
Jan 1999	28	92.48	473.3	2	63	65		128
Feb	17	67.35	178.8	2	83	16		99
Mar	21	73.35	391.5	2	92	31		123
Apr	29	101.35	634.3	2	132	49		181
May	30	115.30	671.2	2	119	75		194
June	31	110	576.5	2	112	96		208

Jul	34	114.15	606.1	2	189	81		270
Aug	31	103.25	586.4	2	99	122		221
Sep	22	82.30	547.6	2	130	85		215

ANNEX D: RAF SOUTHERN AND NORTHERN IRAQ NO-FLY ZONE OPERATIONS 1992-2003

Southern Iraq Aircraft Deployed	
Operation Jural, Aug 92-Feb 98	6 Tornado GR1, 2 VC10, and periodic deployment of a single Nimrod R1
Operation Driver, Oct 94	6 Tornado GR1 and 1 VC10 temporarily deployed and withdrawn
Operation Bolton, ⁵⁶ Nov 97 to Jan 2000	6 Tornado F3, 12 Tornado GR1, 2 VC10, and periodic deployment of a single Nimrod R1; 8 Harrier GR7 from Jan to Apr 98
Op Bolton, Jan 2000 to end of Operation Resinate South	6 Tornado F3, 8 Tornado GR1/4, 2 VC10, and periodic deployment of a single Nimrod R1
Southern Iraq Operational Sorties	
Operation Jural	Tornado GR1 flew 7,532 sorties (22,435 hours)
Operation Bolton to end of Operation Resinate South (including Operation Desert Fox)	Tornado GR1 flew approx. 5,700 sorties (approx. 7,815 hours)
	Harrier GR7 flew 754 sorties for 1027 hours
Southern Iraq No-Fly Zone: Op Jural/Bolton/Resinate (South) and Desert Fox	Tornado GR1/4 flew approx. 13,230 sorties for approx. 30,250 hours

Northern Iraq Aircraft Deployed	Northern Iraq Operational Sorties and Hours
8 Jaguar, Sep 91-Apr 93	2,786 sorties for 6,358 hours
8 Harrier, Apr 93-Apr 95	2,370 sorties for 6,356 hours
6 Tornado GR1, Apr 95-Sep 98	2,549 sorties for 6,273 hours
	Approx. 2,030 sorties for approx. 4,640 hours
4 Jaguar, 1 Oct 98-28 Feb 03	Approx. 2,030 sorties for approx. 4,640 hours
Total Operational Sorties	Approx. 9,730 sorties for approx. 23,630 hours
Other Aircraft	
2 VC10 to Mar 95, then 1	
Periodic Nimrod R1 deployments from Mar 2000 to Mar 03	

ANNEX E: OPERATION DESERT FOX, IRAQ, DECEMBER 1998

Aircraft Deployed	
Total aircraft in theatre	26
Aircraft committed to operation	
Tornado GR1	12
Nimrod R1	1
VC10	2
Total	15
Other RAF aircraft in theatre	
Jaguar	4
Tornado GR1	6
VC10	1
Total	11
Operational Sorties	
Tornado GR1	32
Nimrod R1	1
VC10	5
Total	38
Munitions Released	
Paveway 2	48
Paveway 3	4
Total	52

ANNEX F. OPERATION DENY FLIGHT, BOSNIA, APRIL 1993-DECEMBER 1995

Aircraft Deployed	
Fast jets	
Canberra PR9	1
Harrier GR7 (From Aug 95)	12
Jaguar (to Jul 95)	12
Tornado F3	8
Total	33
Other aircraft	
E-3D	2
Nimrod MR2	2
Nimrod R1	1
Tristar	2
Total	7

Operational Sorties and Hours (including Operation Deliberate Force)	
Fast jets	
Canberra PR9	96 sorties for 533 hours
Harrier GR7 (From Aug 95)	528 sorties for 847 hours
Jaguar (to Jul 95)	3,130 for 5,127 hours
Tornado F3	2,932 sorties for 10,428 hours
Other aircraft	
E-3D	1,609 sorties for 12,839 hours
Nimrod MR2	367 sorties for 2784 hours
Nimrod R1	479 sorties for 3,605 hours
Tristar	805 sorties for 4,606 hours

ANNEX G. OPERATION DELIBERATE FORCE, BOSNIA, AUGUST-SEPTEMBER 1995

Aircraft Deployed	
Total RAF aircraft committed to operation, plus FA2s	36
Total RAF aircraft in theatre, plus FA2s	50
Fast jets	
Harrier GR7	12
Harrier FA2 (RN)	8
Jaguar	3
Tornado F3	8
Total	31
Other aircraft:	
E-3D	2
Nimrod R1	1
Tristar	2
Total	5
Other RAF aircraft in theatre	
Nimrod MR2	2
Chinook	6
Puma	6
Total	14

Operational Sorties	
Sorties by RAF aircraft committed to operation, plus FA2s	406
Fast jet sorties:	323
Harrier GR7 CAS/BAI	99
Harrier GR7 recce	22
Harrier FA2 BAI	22
Harrier FA2 Recce	14
Harrier FA2 AD	11
Jaguar	32
Tornado F3	64
Total	264

Sorties by other aircraft committed to operation	
E-3D	24
Nimrod R	6
Tristar	29
Total	59

Sorties by other RAF aircraft in theatre	
Nimrod MR2	8
Chinook	28
Puma	48
Total	83

Munitions Released	
Paveway 2	48
1,000lb Freefall (RAF)	51
1,000lb Freefall (RN)	21

ANNEX H. KOSOVO: AIRCRAFT, SORTIES FLOWN, MUNITIONS RELEASED

Aircraft Deployed	
Total aircraft	56
Fast jets	
Harrier GR7	16
Harrier FA2 (RN)	7
Tornado GR1	12
Other aircraft	
E-3D	3
Nimrod R1	1
Tristar	4
VC10	5
Chinook	4
Puma	4
Operational Sorties (fixed-wing aircraft)	
Offensive sorties (Tornado GR1 & Harrier GR7)	1,008
Combat Air Patrols (RN Harrier FA2)	102
AAR (Tristar & VC10)	324
AEW (E-3D)	184
Total	1,618
Munitions Released	
1000lb unguided bombs	230
ALARM	6
PW2	236
PW3	18
RBL755	531
Total	1,021

ANNEX I: TIALD/LGB TRAINING IN THE RAF

ANNEX D TO STC/7765/14/KLTL

DATED OCT 99

LASER GUIDED BOMBS – INTRODUCTION INTO SERVICE

INTRODUCTION

1. During Operation ALLIED FORCE Laser Guided Bombs (LGBs) achieved a lower than expected hit rate. In particular, UK PAVEWAY III (PWIII) achieved only a 45% hit rate, and the Harrier Force ceased to employ it after 3 out of 3 bombs failed to hit the target. This paper is therefore a study which traces the history of LGBs in RAF service in order to identify any failures in procedures; both the 1000lb PWII and the 2000lb PWIII are considered....

AIM

2. The aim of this paper is to identify shortcomings in the procedures used to introduce the UK PWII and PWIII into service, in order to recommend remedial action and improvements for future weapons.

PRE-GULF WAR

3. In January 1977 ASR 1229 detailed the requirement for Laser guidance of HE bombs. The requirement also detailed the necessity for “full development and procurement”, but, unsurprisingly for that era, only Low Level (LL) options were considered. The resulting purchase of the US PAVEWAY/ PAVESPIKE system was trialled quite extensively by the aircrew of 12, XV, 16 and 208 Squadrons, who dropped between 20 and 30 PWIIIs on Garvie Island from Buccaneer aircraft, some of the drops being co-operative with Jaguars, and all being LL.

4. After the initial surge of drops during introduction into service, practice with PWII became a scarce event, and the Harrier GR3 did not receive a clearance to drop the weapon. Although records are sketchy for the period 79-82, Squadrons’ F540s show that most did

not drop any LGBs, and documentation of the Falklands conflict clearly indicate that the Harrier Force learned how to employ PWII during the conflict, without ever having practised - a situation with remarkable parallels to the recent situation in Kosovo. The lack of LGB training for the Harrier pilots was not identified as a lesson to be learned from the Falklands conflict, as the Harrier had been employed outside its CONOPs due to its unique capabilities.

5. In the period between the Falklands and Gulf conflicts, the aircrew training emphasis remained firmly in the LL arena, and although a small amount of LGB training took place, virtually all consisted of LL Toss manoeuvres. The lack of suitable LGB training Air to ground Weapons Ranges (AWRs) was identified at a CTTO LGB Symposium in 1985, but the task to resolve the problem was issued simultaneously to Air Off, Hunting Engineering and Ops STC, and no improvement in range facilities ever came to fruition. Shortly before the Gulf War, of the 11 offensive squadrons based in RAFG, only 2 (20 and 16 Squadrons) had a LGB capability, with their training mainly limited to 'dry' LL loft attacks. Between 1984 (when they converted to Tornado) and the Gulf War, these 2 LGB specialist squadrons dropped an average of only 6 PWII per year each. Other squadrons, who lacked the specialist LGB role, averaged only half this number of drops.

GULF WAR

6. Shortly before the commencement of hostilities in the Gulf war, MOD tasked CTTO to trial Medium Level (ML) and High Angle Dive (HA) deliveries of PWII. These events were cleared for Buccaneer, Tornado and Jaguar with a total of only 6 weapon drops; as previously in the Falklands the aircrew involved in the conflict conducted their training on operations. Nonetheless, the results were good, with a hit rate of 53% for PAVESPIKE designations and 69% for the new TIALD pod, which, unlike the PAVESPIKE, was capable of ground stabilised imagery. By the end of the conflict many crews were well trained in TIALD/LGB delivery, as over 1100 PWIIs were dropped; hence the creditable hit rate. Despite 22% of LGBs missing due to aircrew error, the Op GRANBY Lessons Learned did not mention the lack of adequate training in ML LGB deliveries; while the document stated that aircrews must be capable of fighting at ML, it stressed that we should continue to train for LL, the most demanding scenario.

POST-GULF WAR

7. As soon as the Gulf War was over, limitations on the dropping of LGBs for training were imposed due to shortage of PWII kits, with a rapid effect on results; in Oct 92, 17(F) Squadron, taking part in Exercise CHAMELEON, missed Garvie Island with all 5 of their PWIIIs due to lack of familiarity with procedures. Commandant CTTO, commenting on the above, assessed that the Service was losing its expertise with LGBs.

8. Of equal importance to the shortage of training LGBs was the emerging shortage of designator pods, as the Buccaneer/PAVESPIKE was retired from Service. The few TIALD pods which made up the original order were heavily committed to development trials and Op JURAL, leaving none for training; at one point in 1993 even trials were suspended in order to support Op JURAL, and self designation was rejected as a tactic due to pod shortage. Even at this relatively recent stage, CTTO were instructed by Air Off that the priority on resumption of trials was to be LL employment.

9. In May 94 Ministerial approval was given for the purchase of 1500 PWIII, as well as an extra 6 TIALD pods; the PWIII was referred to as "the LL LGB", and the specification required a range of 10km from a LL release. However the PWIII offered many other capabilities and complications; it could be dropped from considerable distances at ML (9nm from 20,000ft), and it had an attack profile which could optimise its profile for bunker penetration. In all, the bomb had 4 separate modes of operation, each of which was modified in different ways by the conditions pertaining at weapon release. From the start it was acknowledged that a statistically significant number of trial releases was financially out of the question, and to make the most of the releases available (in the USA) a ground based designator was used to ensure weapon target acquisition. While these tests proved valuable in terms of validating the bomb and warhead function, they contributed very little to the overall bomb/TIALD pod combination. At approximately the same time, the subject of setting up a training policy for TIALD/LGB, including Basic Training Requirements (BTRs) and an Annual Training Entitlement (ATE), was raised by Air Off. Unfortunately, the command chain failed to produce a strategy for the provision of realistic training for the front line, with the task passing from MOD to STC to HQ 1 Gp and back again without an effective policy being created. Despite earlier (1992) requests by AOC 1 Gp that 240 practice PWIII would be required for the first 2 years of training, the inherent difficulties of finding AWRs which could

contain the PWIII Hazard Impact Area Trace (HIAT) led to very few being dropped. At the same time, the Laser Guided Training Round (LGTR), which had been proposed as a partial solution to the training problem, failed to materialise; although the AWC were tasked and agreed to test the weapon in 1995, no trials occurred.

10. 1995 saw the first serious employment of LGBs since the Gulf War, with the Harrier and Jaguar Forces conducting sorties as part of Op VULCAN in Bosnia. The Harriers dropped 48 PWII, with a hit rate of 85%; this unusually high hit rate is worthy of examination. Although the aircrew involved had received only 1 week of dry attacks as training, several factors combined to help the Jaguar/Harrier success. All drops were in daylight, and most took place in a relatively benign environment, which did not require evasive tactics; when necessary the Harrier/Jaguar formation carried out several practice runs against each DMPI before releasing weapons. Consequently the co-operative attacks employed were in ideal conditions; the Harriers validated the laser spot on their TV display, and concentrated on correct weapon release; the Jaguars were able to lase without the constraint of having to fly to a weapon release point. An additional advantage was that the Jaguar TIALD system was extremely well mechanised, providing smooth target tracking, unlike the Tornado and Harrier systems which suffer from data latency. Finally, only 2 Jaguar pilots designated for all the attacks, ensuring that a high level of expertise was maintained.

11. By 1996 it was apparent that the TIALD pod was beginning to diverge into 3 separate aircraft related fleets with 3 different modification states, and although the problem was recognised by the SR(A)1242 Project Directors' Review Board, and the possibility of a centralised committee to ensure standardisation was discussed, no action was taken. The 3 pod types continued to remain independent (requiring modification to move from one ac type to another) until the formation of the TIALD Steering Group (TSG) in 1998. Due to these differences, and the heavy commitment of pods to Op JURAL, the number of pods available to any of the 3 ac types remained too low to sustain a realistic training programme. The Jaguar was initially able to train to a reasonable level, as it was the only user of the 200 Series pod; however, as these pods were returned to works for update to 400 Series, Jaguar training was severely curtailed. Tornado training, which should have benefited from the increasing number of 400 Series pods, suffered from the JURAL commitment and the requirement for all trials pods (including Harrier development work) to be of the 400 Series.

12. Not until mid 1997 was the bulk of the documentation for the use of PWIII delivered to units, over a year after the first half of actual weapon deliveries were complete. Even then, no legal PWIII HIATs were available and Mode 2 releases for PWIII were not documented. These failings did not become apparent immediately, as development of a reasonable training regime, which might have discovered the problems, was precluded by several more significant factors. No UK AWR could contain the HIAT for either PWII or PWIII from realistic ML releases (15-25,000ft); only 240 inert PWIII were bought, which were insufficient to sustain an ongoing ATE, and thus these were mainly held for trials. In addition, PWII kits were in short supply (631), so there was no PWII ATE, and all serviceable TIALD pods were committed to Ops and trials. Synthetic trainers had initially been purchased for Tornado, but had fallen behind the development standard of the pods due to lack of funding and were of no training value.

13. With the deployment of Tornados and Harriers to the Gulf in early 1998, TIALD pods and LGBs became even scarcer assets for training, but when the Harriers returned an attempt was made to establish a training regime. HQ 1 Gp and Air Off agreed that each crew attending the Combined QWI course should be allocated a practice PWII, and each squadron deploying to Op BOLTON should receive 3 PWIIIs (swiftly increased to 9) and a TIALD pod (if available) for pre-deployment training. In Oct 98 an allocation of 17 inert PWIII per year was also agreed. It was this training schedule and a more rigorous reporting system which, in Oct 98, allowed the detection of serious problems with 400 Series TIALD pods which had in fact been present for 2 years, and which guaranteed failed attacks with some laser codes.

Op DESERT FOX

14. As a result of the work carried out by HQ 1 Gp and Air Off in the preceding months, Op DESERT FOX in Nov 98 was reasonably successful, although the crews of 12 Squadron still had comparatively little TIALD training; most of their experience came from a previous detachment to Op BOLTON. In all, over 3 days of operational flying, they dropped 48 PWII with 25 hits on target (52%), and 4 PWIII with 3 hits. Op DESERT FOX produced its own batch of lessons identified, of which the most significant was the requirement for an extra 24 TIALD pods; at the same time a TIALD Steering Group (TSG) under the auspices of DAO was formed to take forward several TIALD pod improvements, and improve standardisation.

Additionally, HQ 1 Gp were tasked with reviewing their Annual Training Syllabi, and liaising with AWC over development of a training strategy for PWII and PWIII. This has resulted in the allocation (not an ATE) of 333 PWII per year for training, the development of Aberporth as an AWR, and the clearance to deliver inert LGBs at Goose Bay. The problems of increasing the PWIII allocation, and finding suitable AWRs to employ it, are proving more difficult to resolve and remain ongoing.

Op ALLIED FORCE

15. Before any of the above initiatives had time to take effect the intervention in Kosovo developed, with only the crews of 14 Squadron reasonably current and practised on the TIALD pod, and neither Harrier nor Tornado crews familiar with PWIII operations. The AWC analysis of LGBs dropped in Op ALLIED FORCE showed a wide variation in results between PWII, with a hit rate of 65%, and PWIII with a hit rate of 45%. Further examination of these broad figures shows that of the 222 PWIIs dropped, the hit rate is historically typical; however it comprises a mix of an 85% hit rate by experienced crews and a 55% hit rate by those without experience. The reason for the disappointing hit rate of the potentially more accurate PWIII is more difficult to determine, partly because the small number dropped (20) is not statistically significant. However, the error which led the Harrier Force to abandon use of the weapon after the first 3 bombs missed, is directly attributable to a total lack of familiarity with the weapon and its complicated modes of employment. Tornado attacks also suffered a relatively low hit rate (53%) due to lack of familiarity with the system, and crews from both aircraft fleets were hindered by the poor standard of documentation. The lower training level achieved with PWIII had a demonstrable and detrimental effect on weapon results.

The Current Situation

16. Despite the agreement of Air Off to allocate 333 PWII and 17 PWIII per year for training, an ATE is still not included in AP98; significantly greater numbers of PWIII are required, and the ATE for both weapons must be established to allow training to continue. The AWC is developing plans, in concert with 1 Gp, which will lead to better analysis of LGB deliveries, but measures have not yet been finalised. Development of access to suitable AWRs remains unresolved, despite the opening of Aberporth for LGB deliveries; it is an

over-sea range, and will therefore provide less training for TIALD operators than would an overland range. Additionally, it has a poor weather factor, having 3/8 or less cloud below 10,000 ft only one day in five. Goose Bay has now been cleared for PWII and III deliveries from ML, but sqns have already missed opportunities for drops due to unavailability of TIALD pods; also Goose Bay can only accept inert weapons, which will limit its utility for PWIII, for which few inerts are available. Shortage of TIALD pods remains the most critical item on the path to establishing a coherent training strategy. Recent work at HQ 1 Gp has established that 53 pods are required to sustain training, with 5 more to support industry; of the current inventory of 34 pods only 11 are available for training, with the rest in industry or on Ops (as of 30 Sep 99). A full TIALD/LGB capability is not attainable with such a shortfall. Of the extra buy of 24 pods identified as necessary to achieve the required training numbers, only 6 have been funded, and they will not be delivered until 2002. A TIALD/LGB/ML training strategy to match the reality of the last decade's operational commitments has stalled due to lack of training assets, and synthetic training is only now becoming viable, with Jaguar and Harrier equipped and the Tornado funded. An ongoing end-to-end testing programme, which proved so vital in correcting the serious fusing fault in JP233, and which would have quickly discovered the 400 Series TIALD fault, has likewise been proscribed by lack of assets.

The Future

17. Even with the current shortfall of TIALD pods, measures can be developed to maximise the numbers of crews trained in core TIALD/LGB skills; as more TIALD pods become available, the numbers of trained crews should rise until ML TIALD/LGB is a core CR capability for all offensive aircrew. It is important that the measures introduced for TIALD/LGB are mirrored in the arrangements for new air-to-ground weapons such as BRIMSTONE, STORMSHADOW and ST(SA)1248. Smart Procurement and the development of the Customer 2 position should play a key role in ensuring that errors made during the life of PWII and III are not repeated for future weapons.

CONCLUSION

18. Despite recent initiatives to improve the training available to squadrons, the lack of resources has prevented the development of an adequately resourced training strategy; nor

is there a policy for effective ongoing in-service end-to-end testing. To address these problems the following detailed significant faults must be rectified:

- a. ATE. The ATE for both types of LGB has been consistently less than adequate. The recent allocation (not an ATE) of 330 PWII per year is a great step forward, but a realistic allocation of PWIII has yet to be decided. An ATE for both weapons is required.
- b. Analysis. The relatively few drops, outside the initial trials, which have occurred have been largely undocumented, with little effort at constructive analysis of results to improve corporate knowledge. HQ 1 Gp and the AWC are actively pursuing a system whereby greater emphasis is placed on the careful analysis of LGB releases.
- c. AWRs. The requirement to improve range availability, identified in 1985, was never actioned. Of the UK AWRs, only the recent introduction of Aberporth offers ML releases, inert only, and limited by a poor weather factor and total lack of overland targets.
- d. TIALD Pods. Insufficient TIALD pods were ordered for realistic training to be achievable. TIALD pods remain in short supply; the 6 on order are not due until 2002, and the remaining 18 required cannot begin to appear until 2003. Those in service are heavily committed to operations, where their flying rate and training value are curtailed.
- e. TIALD Configuration Control. The requirement for configuration control for TIALD pods, recognised in 1996, was not actioned. TIALD configuration control is now progressing under the auspices of the TSG, and therefore pod performance and inter-operability should steadily improve.
- f. Training Policy. The TIALD/LGB training policy requested by Air Off in 1994 was never produced. The development of a TIALD/LGB training policy has stalled on the lack of ATE, pods and AWRs, and although the problem is now being addressed it has yet to be resolved.
- g. ML Training. Development of ML training, especially in TIALD/LGB, has lagged behind the realities of operational commitments, due mainly to a lack of training assets as detailed above.

h. Synthetic Training. Synthetic training has lagged well behind the development state of TIALD, although Jaguar now has a good PC-based system. This system has recently (since Op ALLIED FORCE) been provided for the HARRIER, and has been funded for the Tornado GR1/4. The GR4 simulator should have TIALD simulation as a core capability. As a consequence of the above failings, the turnover of aircrew on squadrons has outpaced the ability of units to maintain a core of LGB expertise.

19. For future weapons, Smart Procurement should allow the main user (Customer 2) to influence the product prior to ISD, as well as giving him greater responsibility for in service development including ongoing end-to-end testing; this process should prevent similar failings occurring with future weapons such as BRIMSTONE, STORMSHADOW and ST(SA)1248.

SUMMARY

20. The initial buy of the PAVESPIKE/PAVEWAY system, and its introduction to service, was well conceived and handled for the limited aims of the day, and provided the RAF with a definite advance in capability. However, there was no single authority responsible for the complete weapon system in service; responsibility for the provision of LGBs, aircraft software, synthetic training, AWRs and TIALD pods all fell in separate areas, and even development of a training strategy slipped between Group and Command. The changing defence environment may have been recognised by individuals in the command chain, but no one was responsible for, nor capable of, drawing together the disparate threads into a cohesive plan for the future. Development of the weapons' capability envelope, beyond the SOR under which PWII and III were purchased, was allowed to occur without a coherently resourced trial. The lack of manufacturer information for the expanded envelope, together with the extremely limited scale of trials work, led to the introduction of weapon release profiles that were not fully documented. For future weapons the introduction of Smart Procurement should prevent similar problems occurring ...

ANNEX J: DRAMATIS PERSONAE

Ahtisaari, Martti	-	EU envoy to Yugoslavia, President of Finland
Albright, Madeleine	-	US Secretary of State
Annan, Kofi	-	UN Secretary General
Aziz, Tariq	-	Iraqi Foreign Minister
Blair, Tony	-	UK Prime Minister
Butler, Richard	-	UNSCOM's chief weapons inspector
Van den Broek, Hans	-	Netherlands Foreign Minister
Chernomyrdin, Viktor	-	Russian envoy to Yugoslavia
Chirac, Jacques	-	President of France
Clark, General Wesley	-	Supreme Allied Commander Europe
Clinton, Bill	-	President of the United States
Cohen, William	-	US Secretary of Defence
Cook, Robin	-	UK Foreign Secretary
Crawford, Air Commodore Peter	-	UK MOD Director of Air Operations
Day, Air Marshal Sir John	-	UK Deputy Chief of Defence Staff (Commitments)

Ellis, Admiral James	-	Commander-in-Chief, Allied Forces Southern Europe
Fisher, Joschka	-	German Foreign Minister
Garnett, Vice-Admiral Sir Ian	-	UK Chief of Joint Operations from February 1999
Guthrie, General Sir Charles	-	UK Chief of Defence Staff
Holbrooke, Richard	-	US envoy to Yugoslavia
Hoon, Geoffrey	-	UK Secretary of State for Defence from October 1999
Hussein, Saddam	-	President of Iraq
Ivanov, Igor	-	Russian Foreign Minister
Jackson, Lt General Sir Michael	-	Commander KFOR
Johns, Air Chief Marshal Sir Richard	-	UK Chief of Air Staff
Jospin, Lionel	-	Prime Minister of France
Kelche, Jean-Pierre	-	French Chief of Defence Staff
Von Kirchbach, General Hans-Peter	-	German Chief of Defence Staff
Milosevic, Slobodan	-	President of the Federal Republic of Yugoslavia
Papandreou, George	-	Greek Foreign Minister

Persson, Goran	-	Prime Minister of Sweden
Robertson, George	-	UK Secretary of State for Defence to October 1999
Shelton, General Hugh	-	US Chairman of the Joint Chiefs of Staff
Short, Lt General Michael	-	Combined Forces Air Component Commander, Operation Allied Force
Smith, General Sir Rupert	-	Deputy Supreme Allied Commander Europe
Solana, Javier	-	Secretary General of NATO
Talbott, Strobe	-	US Deputy Secretary of State
Torpy, Air Commodore Glenn	-	UK PJHQ Assistant Chief of Staff Operations
Vedrine, Hubert	-	French Foreign Minister
Wallace, Lt General Sir Christopher	-	UK Chief of Joint Operations to February 1999
Yeltsin, Boris	-	President of Russia

ANNEX K: ACRONYMS

AAA	-	Anti-Aircraft Artillery
AAR	-	Air-to-Air Refuelling
ACAS	-	Assistant Chief of Air Staff
ACOS J3	-	Assistant Chief of Staff Operations
ACTORD	-	Activation Order
ALARM	-	Air-Launched Anti-Radiation Missile
AOR	-	Area of Responsibility
ATO	-	Air Tasking Order
AWC	-	Air Warfare Centre
BAI	-	Battlefield Air Interdiction
BDA	-	Battle-Damage Assessment
CAG	-	Carrier Air Group
CALCM	-	Conventional Air-Launched Cruise Missile
CAOC	-	Combined Air Operations Centre
CAP	-	Combat Air Patrol
CAS	-	Chief of Air Staff
CAS	-	Close Air Support
CBFB	-	Commander British Forces Bolton
CC JTF-SWA	-	Commander-in-Chief Joint Task Force Southern Watch
CDI	-	Chief of Defence Intelligence
CDS	-	Chief of Defence Staff
CJO	-	Chief of Joint Operations
CJCS	-	Chairman of the Joint Chiefs of Staff
CBFI(A)	-	Commander British Forces Italy (Air)
CFACC	-	Combined Forces Air Component Commander
CINCSOUTH	-	Commander-in-Chief Allied Forces Southern Europe
CMC	-	Chairman of NATO's Military Committee
COMAIRSOUTH	-	Commander Allied Air Forces Southern Europe
COMFIVEATAF	-	Commander Fifth Tactical Air Force
COMJTF	-	Commander Joint Task Force
CSAR	-	Combat Survival and Rescue
CSCE	-	Conference on Security and Co-operation in Europe

CTCB	-	Combined Targeting Co-ordination Board
DAO	-	Director of Air Operations
DCA	-	Defensive Counter-Air
DCDS(C)	-	Deputy Chief of Defence Staff (Commitments)
DMPI	-	Desired Mean Point of Impact
DOP	-	Defence and Overseas Policy Committee
DPI	-	Desired Point of Impact
DSACEUR	-	Deputy SACEUR
ECM	-	Electronic Counter-Measures
ECR	-	Electronic Combat and Reconnaissance
EF	-	Extraction Force
ELINT	-	Electronic Intelligence
EO	-	Electro-Optical
ESM	-	Electronic Surveillance Measures
EU	-	European Union
EW	-	Electronic Warfare
FFCD	-	Full, Final, and Complete Disclosure
FRY	-	Federal Republic of Yugoslavia
GAT	-	CAOC Guidance, Apportionment and Targeting division
GBAD	-	Ground-Based Air Defence
HQBFB	-	Headquarters British Forces Bolton
HQ STC	-	Headquarters RAF Strike Command
HVAA	-	High Value Air Assets
IADS	-	Integrated Air Defence System
IAEA	-	International Atomic Energy Agency
ICTY	-	International Criminal Tribunal for the former Yugoslavia
IDP	-	Internally displaced persons
IMF	-	International Monetary Fund
ISTAR	-	Intelligence, Surveillance, Targeting and Reconnaissance
JAC	-	Joint Analysis Centre
JRDF	-	Joint Rapid Deployment Force
JTFSW	-	Joint Task Force Southern Watch
KDP	-	Kurdistan Democratic Party
KEZ	-	Kosovo Engagement Zone

KFOR	-	Kosovo Force (NATO Kosovo peace-implementation force)
KLA	-	Kosovo Liberation Army
KVM	-	Kosovo Verification Mission
LGB	-	Laser-Guided Bomb
MANPAD	-	Man-Portable Air Defence System
MC	-	Military Committee
ML	-	Medium Level
MOB	-	Main Operating Bases
MOD	-	Ministry of Defence
MOU	-	Memorandum of Understanding
MTA	-	Military Technical Agreement
MUP	-	Ministry of Interior Police
NAC	-	North Atlantic Council
NFZ	-	No-Fly Zone
NTM	-	Notice to Move
NVG	-	Night Vision Goggles
OPLAN	-	Operation Plan
OSCE	-	Organisation for Security and Co-operation in Europe
OSW	-	Operation Southern Watch
P5	-	Permanent Five Members of the UN Security Council
PGM	-	Precision-Guided Munition
PJHQ	-	Permanent Joint Headquarters
PK	-	Probability of Kill
POL	-	Petrol, Oil, Lubricants
PSAB	-	Prince Sultan Air Base, Al Kharj
RDT&E	-	Research, Development, Test and Evaluation
RGFC	-	Republican Guard Forces Command
RIC	-	Reconnaissance Intelligence Centre
RO	-	Response Option
ROE	-	Rules of Engagement
RWR	-	Radar Warning Receiver
SACEUR	-	Supreme Allied Commander Europe
SAM	-	Surface-to-Air Missile

SAOEU	-	Strike/Attack Operational Evaluation Unit
SEAD	-	Suppression of Enemy Air Defences
SHAPE	-	Supreme Headquarters Allied Powers Europe
SIGINT	-	Signals Intelligence
SRG	-	Special Republican Guard
SSO	-	Special Security Organisation
STC	-	RAF Strike Command
STRAT	-	CAOC Strategy division
TACAN	-	Tactical Air Navigation System
TEM	-	Technical Evaluation Meeting
TFH	-	Task Force Hawk
TIALD	-	Thermal Imaging Airborne Laser Designator
TLAM	-	Tomahawk Land-Attack Cruise Missile
UAV	-	Unmanned Air Vehicle
UCK	-	Kosovo Liberation Army
UN	-	United Nations
UNSCOM	-	United Nations Special Commission
UNSCR	-	United Nations Security Council Resolution
UNHCR	-	United Nations High Commissioner for Refugees
USAF	-	United States Air Force
VJ	-	Yugoslav Army
WET	-	Weapons Effectiveness Team
WMD	-	Weapons of Mass Destruction

Notes

1. CM 6041-I, *Delivering Security in a Changing World* (Defence White Paper, December 2003), p. 7, paras 3.2-3.3.
2. Air Publication (AP) 3000, *Royal Air Force Air Power Doctrine* (Ministry of Defence, 1990), p. 90.
3. AP 3000, p. 73.
4. AP 3000, p. 71.
5. AWC, *Air Operations* (RAF, 1996), p. 6.V.5.
6. AWC, *Air Operations*, p. 4.II.2.
7. CM 1981, *Statement on the Defence Estimates, 1992* (HMSO, London, 1992), p. 32.
8. Sebastian Ritchie, 'The Royal Air Force and the First Gulf War, 1990-91: A Case Study in the Identification and Implementation of Air Power Lessons', *Royal Air Force Air Power Review*, Vol 17, No. 1, Spring 1994, p. 45.
9. Ritchie, 'The Royal Air Force and the First Gulf War', pp. 45-48.
10. By the late 1990s, the documents rarely distinguished between the Tornado GR1 and GR1A. The aircraft based at PSAB were regularly referred to in the documents as GR1s, although the PSAB detachment's primary role was reconnaissance.
11. The Ocean Wave 97 deployment placed a naval Task Group in the Far East comprising in all some 20 surface ships, submarines and Royal Fleet Auxiliaries, and including a major amphibious element.
12. UNSCOM reported to the UN on its progress in Iraq at six-monthly intervals.
13. As a crisis that might require the deployment of British forces developed, teams were formed in MOD head office and PJHQ. Working together, they were the focus of the Defence Crisis Management Organisation for each particular crisis. A Current Commitments Team in MOD head office monitored the crisis and liaised with other Government departments, allies and organisations such as NATO and the Western European Union.
14. Created in 1996, the Joint Rapid Deployment Force was the precursor of the Joint Rapid Reaction Force, which replaced it in 1999.
15. TACAN – Tactical Air Navigation System.
16. NVGs – Night Vision Goggles.
17. EO – Electro-Optical.

18. Within the Air Warfare Centre's overarching role of provision of Integrated Mission Support, the function of the SAOEU was to provide timely advice to sponsors and the front line regarding operational matters at the tactical level for the RAF's fast-jet ground attack fleet of Harrier, Jaguar and Tornado GR1/4 aircraft. This encompassed tactical advice on the use of existing equipment and employment of current doctrine and the evaluation of new equipment for its operational utility and suitability.

19. In all, four Technical Evaluation Meetings were held in Baghdad during February and March 1998, and July 1998, to discuss aspects of Iraq's WMD programmes. The meetings, which included independent experts from a broad range of countries as well as UNSCOM's own staff, covered Iraq's production of the nerve agent VX, its accounting for production and disposal of missile warheads, and its biological warfare programme. Iraq had requested these meetings, asserting that UNSCOM was biased.

20. OSW – Operation Southern Watch.

21. Laser designators and seekers use a pulse coding system to ensure that a specific seeker and designator combination work in harmony. By setting the same code in both the designator and the seeker, the seeker will track only the energy with the correct coding. The seeker will track the first correctly coded, significant laser energy it sees. The seeker will always lock on to the most powerful return in its view. The pulse coding used by TIALD was based on Pulse Repetition Frequency.

22. Inadequate or delayed information was to remain a problem at Ali Al Salem throughout the operation. The RAF were not authorised to hold certain very highly classified US material at the base, some of which was essential to effective mission planning. This information could only be obtained by making a one-hour drive to the American base at Al Jabba. According to one post-operation report, this 'might have resulted in either mission cancellations, or mission failure, as well as a significant increase in risk'. There was also a lack of target intelligence at Ali Al Salem, so that planning had largely to be conducted from annotated imagery, without the benefit of detailed target descriptions or construction information.

23. RGFC – Republican Guard Forces Command.

24. RDT&E – Research, Development, Test and Evaluation.

25. HVAA – High Value Air Assets, particularly the larger ISTAR platforms.

26. A priming equipment pack was a deployable spares pack designed to give overseas detachments a limited degree of self-sufficiency in theatre and so moderate the demand for spares to be sent out from the UK.

27. DMPI – Desired Mean Point of Impact, abbreviated elsewhere to DPI.

28. RO – Response Option. This was the coalition term for an air strike in response to hostile Iraqi action or an infringement of the No-Fly Zones.

29. CC JTF-SWA – Another abbreviation for Commander-in-Chief Joint Task Force Southern Watch.

30. Author's italics.

31. Referring to the CTCB as the Joint Targeting Coordination Board (JTCB), one NATO doctrinal publication described its role as follows. 'The Board is chaired by the JFC, or his most senior deputy, and is attended by all the component commanders, senior representatives from the JFC's staff and representatives from subordinate units, as required by the JFC. The JTCB will advise the JFC on optimisation and prioritisation of targets theatre wide and the associated daily apportionment of all assets. It is the forum for deconfliction of other operations, such as Special Forces. It is at this meeting that the Target Nomination List (TNL) is drawn from the Joint Prioritised Integrated Target List (JPITL) and approved by the JFC for a particular ATO. This results directly in the production of the Master Air Attack Plan (MAAP). The ultimate aim of the JTCB is clear and unequivocal guidance from the JFC as to the direction of the headquarters staffs and subordinate formations, for the next and subsequent stages of the operation.'

32. ECR – Electronic Combat and Reconnaissance.

33. 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. 76.

34. Interview with Lieutenant General Michael C. Short, *Frontline: War in Europe – NATO's 1999 War against Serbia over Kosovo* (February 2000), <https://www.pbs.org/wgbh/pages/frontline/shows/kosovo/interviews/short.html>, accessed 2 March 2018.

35. Medium Collateral Damage Risk was defined as follows: 'Civilian objects within a radius 250-500m of the target, but no civilian objects inside 250m'.

36. Low Civilian Casualty Risk was defined as 'Zero to 30 casualties'.

37. Task Force Hawk was the US Apache helicopter detachment that deployed to Macedonia in April 1999.

38. UCK – Ushtria Çlirimtare e Kosovës – was the Kosovo Albanian name for the KLA.

39. The US European Command's Joint Analysis Centre (JAC) at RAF Molesworth processed, analysed and consolidated data to produce fused intelligence information focusing on an area of responsibility consisting of more than 77 countries across Europe, Africa and the Middle East. They supported mission planning and operations by US, Allied and NATO commanders during peace, crisis and war.

40. UAV – Unmanned Air Vehicle.

41. One of these was a very near miss. BDA showed that the target had been destroyed but it is possible that this was the result of a later attack by other NATO aircraft.

42. In Corridor Suppression, ALARMs were launched along the projected aircraft track; they then climbed to high altitude and glided along the track for a distance of about 25-30 miles with the missile seeker listening for SAM radars. If emissions were detected, the missiles attacked the radar. If no emissions were detected, the missiles glided to an imaginary target option ahead of the aircraft. Crews could ensure that this position satisfied collateral damage criteria.
43. COMJTF – Commander Joint Task Force, i.e., CINCSOUTH, Admiral Ellis.
44. J. Eyal, 'Kosovo: Killing the Myths after the Killing has Subsided', *Journal of the Royal United Services Institution*, February 2000, p. 26.
45. By 'SACEUR's plan' he meant the ground campaign plan prepared within SHAPE.
46. The term *weapon sorties* is used to identify specific munition types carried on an aircraft. The term *aircraft sorties* relates to the aircraft only, irrespective of the weapon load carried, and includes aircraft such as lookouts or designators, which may not have been equipped with weapons. Hence, when two different weapon types are carried on one aircraft for the same mission, two weapon sorties are counted for one aircraft sortie.
47. PK – Probability of Kill.
48. The squadron's hit rate increases to 72 per cent if near misses causing significant damage to the target are included.
49. Some 13 per cent of GR1 Paveway II weapon sortie aborts occurred because of TIALD unserviceabilities; the equivalent figure for Paveway III is 17 per cent. Apart from the weather itself, these unserviceabilities represented the most significant cause of weapon sortie aborts.
50. ASTOR was later known as Sentinel.
51. CM4724, *Kosovo – Lessons From the Crisis*, presented to Parliament by the Secretary of State for Defence, June 2000.
52. ML – Medium Level.
53. 'Single digit' refers to older SAM systems such as SA-3 and SA-6; more modern and very much more capable systems have been labelled with numbers higher than 10 and are therefore known as 'double digit' SAMs.
54. AP 3000, *British Air Power Doctrine* (Directorate of Air Staff, Ministry of Defence, 1999), pp. 1.1.7-1.1.11.
55. Air Warfare Centre, *Air Operations* (RAF, 2000), p. 5.IV.3.
56. There was a brief overlap between Op JURAL and Op BOLTON between Nov 97 and Feb 98, when Op JURAL formally ceased.