

Air Historical Branch (RAF) Narrative

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

**MARITIME AIR RECONNAISSANCE
OPERATIONS**

Author:

Sebastian Ritchie

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

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1. General Introduction

This study surveys the history of Royal Air Force maritime air reconnaissance during Operation Granby, the first Gulf War. The first section provides a narrative of Nimrod operations in the Gulf between August 1990 and April 1991. For the bulk of this period, from August to January, a detachment of three Nimrod MR2s based at Seeb, in Oman, was engaged in surface surveillance with the coalition Maritime Interception Force (MIF); at the beginning of October, the detachment was incorporated into the USCENTCOM Search and Rescue (SAR) organisation, and in January it was transferred from the MIF task to Anti-Surface Unit Warfare (ASUW) operations in direct support of coalition naval units. Each of these very different roles is considered here in turn.

The surface surveillance, SAR and ASUW tasks were all familiar to the Nimrod squadrons in peacetime. However, these functions were normally performed under the direction of a well-established chain of command in the open operational environment of the North Atlantic. The situation in the Gulf could not have been more different. First, maritime air tasking was transferred to temporary command structures designed specifically for Operation Granby; these structures initially proved unsatisfactory where the tactical control (TACON) of the Nimrod detachment was concerned, and had to be revised.

Second, the Nimrod detachment had to fly in confined and crowded airspace where there was a significant threat of hostile activity, 'blue-on-blue' engagements and mid-air collision. The detachment's patrol area had to be determined so as to maximise operational gain, while minimising operational risk; overflight restrictions imposed by the surrounding Gulf states had to be carefully observed; and the Nimrod MR2 itself had to be extensively modernised to enhance its surveillance capability and its navigation, communications and self-defence systems. These four themes – command and control, the operations area, overflight restrictions, and the Nimrod enhancement programme – are examined in the second section of this study.

2. Historical Background

The Nimrod maritime patrol aircraft (MPA) entered service with the RAF in 1969, and subsequently became the workhorse of the UK's maritime air reconnaissance effort. During the 1970s, the Nimrod MR1 served in the submarine and surface vessel surveillance roles and carried out search and rescue duties in the North Atlantic and the North Sea. At the end of the decade, it was the subject of a major upgrade programme from which emerged the Mk MR2, incorporating a variety of improved communication, navigation, hunting and detection equipment, including the Searchwater surface surveillance radar. Introduced in 1980, the Nimrod MR2 first saw operational service in Operation Corporate, the Falklands conflict of 1982, flying from Ascension Island.

Despite teething troubles with some of the MR2's new equipment, the aircraft demonstrated a remarkably versatile capability during Corporate, undertaking submarine and surface surveillance sorties around Ascension and in support of the Task Force, using AAR to conduct long-range surveillance operations off the Falklands and near mainland Argentina, acting as a communications link between nuclear powered submarines, making limited supply drops, and providing SAR cover to other aircraft. Nimrod MR2s also vectored operational aircraft and AAR tankers to their rendezvous locations.

By the mid-1980s, the UK's maritime air reconnaissance effort consisted of four squadrons of Nimrod MR2s located at RAF Kinloss and RAF St Mawgan. The Nimrod force was commanded by the Air Officer Commanding (AOC) 18 Group, based at Northwood; it remained predominantly engaged in the surveillance of Soviet naval vessels in the North Atlantic. However, RAF Nimrods also mounted regular deployments to a variety of overseas theatres, one of which was Seeb in Oman. Under the auspices of an operation entitled 'Magic Roundabout', Nimrods based at Seeb had, since 1981, regularly conducted surface surveillance sorties in the Gulf region in support of the Omani armed forces. The experience gained through Magic Roundabout greatly facilitated the task of mounting a more substantial and prolonged deployment at Seeb for Operation Granby.

Following the invasion and occupation of Kuwait on 2 August 1990, UN Security Council Resolution 660 called on Iraq to withdraw its forces, and Resolution 661 imposed economic sanctions prohibiting virtually all trade with the two countries, except for inbound medical supplies and certain specified foodstuffs. There was good reason to believe that such a measure might produce a rapid and peaceful solution to the Gulf crisis, for Iraq, with a population of over 14 million people, could not feed itself: food made up more than 25 per cent of total imports and between 50 and 80 per cent of all food requirements had to be imported. Moreover, Iraq was critically dependent on oil exports to pay for imported commodities. In short, the cessation of Iraq's foreign trade would confront her government with the certainty of economic collapse.

The imposition of effective economic sanctions inevitably requires a substantial policing effort. Moreover, attainment of the initial goal, in this case the cessation of Iraqi trade, does not bring the task of enforcement to an end: sanctions may be observed on one day, only to be broken on the next. Continuous monitoring must therefore be maintained until the ultimate political objective is achieved. Iraq's ocean-bound trade through the Persian Gulf could only be halted by the deployment of a substantial naval force with comprehensive maritime air reconnaissance support.

3. Maritime Interception Force Operations

On 8 August 1990, the Secretary of State for Defence authorised the deployment of a detachment of Nimrod MR2s to the Gulf in support of the MIF. They were to assist naval units with the task of interception by identifying and reporting all shipping transiting through their area of operations. Four aircraft were to be prepared: each was to be AAR capable and fitted with Yellowgate ESM, colour Searchwater, and a secure communications package known as STF 154, which had previously been employed during Operation Magic Roundabout. Chaff and flare dispensing systems would provide a self-defence capability, and the aircraft would be fitted with Sidewinder missile pylons. On 9 August, 18 Group also directed that they should carry Air Sea Rescue (ASR) equipment. The task of preparing four aircraft was by no means straightforward: from the Nimrod fleet at Kinloss, only four actually met the prescribed criteria. To provide a margin for contingencies, an additional Nimrod was transferred from St Mawgan.

It was not immediately clear where the Nimrod detachment would be stationed. Although many aircrew were familiar with Seeb, 18 Group Headquarters also seriously considered the island base of Masirah. US Navy P3 MPA were already operating from Masirah, and it seemed likely that Anglo-American maritime air reconnaissance operations would be integrated more quickly and effectively if the Nimrods were based there as well. By contrast, Seeb was a civil airport with limited communications and intelligence facilities.

The issue was important, for integration with the other coalition powers posed many problems that would take time to resolve. The participating air forces employed different codes, keymats and communications equipment; their rules of engagement (ROE) were not initially compatible, command and control arrangements were unclear, operating areas were uncertain, and there was no agreed concept of maritime air reconnaissance operations. There was also a very real danger of blue-on-blue engagements between coalition forces. The Nimrods were valuable but very vulnerable assets.

Nevertheless, in spite of its shortcomings, Seeb was eventually selected for the Nimrod detachment. It found favour partly because of its familiarity and partly because of its location further north than Masirah on the Omani coast. Based at Masirah, Nimrods would have wasted flying hours and fuel in transit to the Gulf; based at Seeb, they could deploy without delay.

Although much uncertainty surrounded the detailed tasking of all coalition forces at this early stage of Operation Granby, the basic role assigned to the Nimrods was clear enough: they were to use their surface surveillance capability to monitor commercial shipping in the Gulf of Oman in support of the UN embargo on trade with Iraq, and assist the Royal Navy and other coalition naval forces. An outline concept of operations drawn up by 18 Group on 10 August stated:

Primary mission for Nimrods will be surveillance of all shipping entering/leaving Persian Gulf through Straits of Hormuz. Priority to be on targets entering the Gulf. The primary operating area will be to the east of the Straits of Hormuz to cover the main shipping lanes to the Far East and Europe.

The same day witnessed the confirmation of preliminary command and control arrangements for British forces in the Gulf. The Joint Commander, Air Chief Marshal Sir Patrick Hine (the AOC-in-C Strike Command) assumed operational command of the Nimrod detachment and other RAF force elements in theatre, while operational control was vested in the Air Commander British Forces Arabian Peninsula. Any supporting activity conducted by 18 Group had therefore to be channelled through the Joint Headquarters (JHQ – located at Headquarters Strike Command, High Wycombe) and the UK Air Headquarters in Riyadh. It would be hard to imagine command arrangements more different from those established for the Falklands War in 1982, when 18 Group Headquarters, at Northwood, had functioned as the air headquarters.

The command and control provisions also decreed that, in the Gulf, the Nimrod Detachment Commander was answerable to the Joint Commander through the UK Air Commander. However, the Air Commander could delegate Tactical Control (TACON) of the Nimrod detachment to the deployed Royal Navy Task Group, Task Group 321.1 (under the Commander Task Group (CTG) 321.1, the Senior Naval Officer Middle East (SNOME)). This created an air of uncertainty about the initial exercise of TACON, and the issue was only clarified on 12 August by a ruling that it should remain with the Detachment Commander while the Nimrods were establishing themselves at Seeb. It might subsequently be transferred to the naval Task Group.

All the command and control arrangements were provisional and subject to change on the basis of operational experience, if this proved necessary. In the meantime, the Detachment Commander's key objectives were to deploy the Nimrods to Seeb, set up the essential base infrastructure, and develop tasking procedures in consultation with other MPA and naval units in the Gulf. As 120 Squadron and 201 Squadron provided the majority of aircraft and aircrew for Operation Granby, the post of Detachment Commander was offered to their respective commanding officers. The issue was decided by the toss of a coin, and the Officer Commanding 120 Squadron, Wing Commander Andrew Neal, called correctly.

The first Nimrod, with Neal on board, arrived at Seeb on 13 August. He found only the most rudimentary working conditions – a room with two telephones for an

operations centre and a space in a hangar for the groundcrew. Neal's primary task was to forge contacts with other maritime authorities in the region and develop a *modus operandi*. He had received no specific instructions about the form operational flying was to take, nor had he been advised which naval units were already in the Gulf. Fortunately, the UK and US military attachés in Oman were able to confirm the status of coalition naval forces in theatre, allowing Neal to fly to Bahrain the following day to discuss the co-ordination of tactics with CTG 321.1, on board HMS York.

Neal afterwards recorded that the meeting had established a good working relationship between HMS York and the Nimrod detachment, and a basis on which he could provide air reconnaissance support to the Task Group. He also declared his willingness to operate under the TACON of York. He next turned his attention to the US Navy, his aim being to establish a communications link with the principal American warship in the Gulf, the aircraft carrier USS Independence.

The Americans agreed that the Nimrod detachment should mount a surface search and area familiarisation sortie on 15 August. During the flight, the tasked Nimrod was challenged by Independence, and a three-way conversation on secure radio ensued between the aircraft captain, Wing Commander Neal and the carrier battle staff. The Nimrod Detachment's future operating procedures were thus finalised. On the 16th, they flew two surface surveillance sorties in the Gulf of Oman, initiating an operational routine that continued, with variations in the area of operations, until January 1991.

The Nimrods would operate two daily sorties of six and a half hours each between 0500 and 1900 in the Gulf of Oman west of 60° east, as far north as the Straits of Hormuz, while American P3s covered the Gulf east of 60° east and south of 2230° north between 1900 and 0500. Crews were asked to identify all vessels, with the aim of detecting actual or potential 'sanction busters'. This involved flying past the stern of each vessel at an altitude of 200ft to confirm its name and port of registration; the vessel was then contacted on the maritime radio band and asked to identify its port of departure, its destination, and the nature of its cargo. This information was relayed to Royal Navy and US Navy warships in the area, and to other agencies such as the Joint Ocean Surveillance Information Centre at Northwood, and the newly created Embargo Surveillance Centre at the Department of Transport in London, both of

which were collating intelligence about the movement of merchant vessels from a wide variety of different sources.

In retrospect, two aspects of these arrangements seem especially noteworthy. First, no plans existed for the Nimrods to conduct this type of operation in conjunction with UK or US naval forces in the Gulf: every detail of their role had to be determined in theatre, a task left to and fulfilled by the Nimrod Detachment Commander. Wing Commander Neal was largely responsible for arranging the command and control measures that allowed the Nimrods to be effectively integrated into the multi-national maritime effort, and for determining the Nimrod operating procedures that applied for the duration of the trade embargo against Iraq. The burden of these duties and the success with which he discharged them were subsequently recognised through the award of the Air Force Cross.

Second, inevitably perhaps, the three parties involved in this early planning activity did not all emerge with identical perceptions of what had, in fact, been agreed. After his discussions with the Royal Navy, Neal signalled that he was 'happy to be under the TACON of [HMS] York'. However, it is not clear that he expected York to assume TACON immediately, and the Joint Headquarters definitely wished him to retain it for the time being. By contrast, the Navy received the impression that CTG 321.1 would be the Nimrod tasking authority. The difficulties inherent in such an arrangement at this time were exposed during the first 15 August mission, when the airborne Nimrod failed to achieve radio contact with HMS York.

Within a week of the first Nimrod's arrival at Seeb, the full complement of personnel in the detachment stood at about 100 people. During the first six weeks of operations, the number increased to 178, comprising 40 officers and 138 airmen. Apart from the Detachment Commander, the executive personnel comprised one Squadron Leader Operations, who was also the Deputy Detachment Commander, and one Engineer Officer. There were four 13-man crews from Kinloss and St Mawgan, all of which were trained in fighter affiliation and at least one of which was AAR-qualified; a staff of ten (three Operations Controllers and supporting personnel) manned the detachment Operations Centre, and the total engineering establishment numbered about 50. Almost for the duration of Operation Granby, the aircrew were accommodated at the Intercontinental Hotel, although there were temporary moves

elsewhere when the Intercontinental's facilities were fully booked. The use of hired accommodation and a substantial fleet of MT, while expensive, allowed the number of support personnel to be kept to a minimum.

One of the most important tasks facing the Detachment Commander during August and September was the establishment at Seeb of a fully functional Operations Centre. The 'room with two telephones' that Neal found on his arrival was transformed by the installation of RAF communications and information systems (CIS), including the TSC 502 satellite communications system. Through the Air Staff Management Aid (ASMA), the Operations Centre was linked to Royal Navy vessels at sea, to the UK Air Headquarters and the Joint Forces Headquarters in Riyadh, and to the JHQ in the UK. The Remotely Deployed Mission Support System (RDMSS) provided communication with RAF Kinloss, RAF St Mawgan and 18 Group Headquarters. Other CIS included OPCON, Link R and RT (for safety of flight), Longhaul COMMCEN (for message traffic), and BTI.

During the first weeks of Operation Granby, the Operations Centre developed a range of vital capabilities: it issued tasking messages to the Nimrods, provided standard operations services and control to aircraft in flight, disseminated in-flight and post-flight mission reports to the relevant coalition authorities and force elements, processed and distributed photographs, and relayed in-flight tactical signals between aircraft and coalition naval units.

To mount two sorties per day, three aircraft were normally maintained in theatre. However, roulement procedures posed special problems where the Nimrod detachment was concerned. Soon after Granby was launched, the Joint Commander issued a standard roulement policy: all RAF personnel deployed to the Gulf should remain in theatre for a minimum of 90 days. This approach, which was genuinely 'designed to promote even-handedness', made no sense where the Nimrods were concerned.

To maintain serviceability, each of the three Nimrods had to be replaced after six weeks in theatre: in other words, the detachment had to operate a rolling changeover every two weeks. Owing to the Nimrod's size and carrying capacity, and the relatively small scale of the Seeb detachment, this arrangement created an opportunity to ferry personnel to and from theatre more regularly than the Joint

Commander envisaged. This more frequent roulement was particularly desirable for the Nimrod force because, as flying hours in the Gulf increased, a significant reduction had, of necessity, to occur in operational and training activities in the UK. If the Joint Commander's ruling had been applied to the Seeb detachment, an enormous disparity in flying hours would have developed between deployed and UK-based aircrew. A more regular aircrew turnover promised to spread flying hours more evenly.

After representations from 18 Group, the Joint Commander agreed that exceptional roulement arrangements should be applied to the Seeb detachment using the fortnightly movement of Nimrods between the UK and the Gulf to change one of the deployed crews (and 13 ground crew). Aircrew would remain in theatre for eight weeks; each Nimrod squadron would provide one crew for the Seeb detachment.

On 17 September, Wing Commander Neal signalled to 18 Group Headquarters that arrangements at Seeb were near completion: 'I now believe we are close to the final product.' Yet a formal CONOPS for the Seeb Nimrod detachment was still lacking. The CONOPS should provide a clear statement of operational objectives and the means, in terms of both tactics and resources, by which they are to be achieved; it serves as a fundamental point of reference for all of those responsible for the successful prosecution of operations. Ideally, the CONOPS will be drawn up at the beginning, or in the very early stages, of an operation. However, this may be impossible when the operation is completely unexpected. Indeed, in such circumstances, the normal process by which operations are based on the CONOPS may be reversed, and the CONOPS itself may emerge from operational and administrative provisions that evolve through practical experience in theatre.

This was certainly true where the Seeb Nimrod detachment was concerned in Operation Granby. Although a so-called 'interim CONOPS' was drawn up as early as 11 August 1990, it provided only the barest outline of the detachment's objectives, delegating most matters of substance to the Joint, Air or Detachment Commanders. They, in turn, received assistance from Headquarters 18 Group and the UK Nimrod stations in finalising operational objectives and procedures, command, control and communications provisions, ROE, equipment and base facility specifications, and manning levels. Details of these arrangements were then written into a draft

CONOPS by Headquarters 18 Group, despite its separation from the Granby chain of command, and circulated to all interested parties.

This draft CONOPS only appeared in the second week of October, and the final version was not completed until November. Until then, an air of uncertainty continued to surround Nimrod operations. As late as 2 October, the maritime Squadron Leader Operations at the UK Air Headquarters demanded formal clarification of the Nimrod Detachment's task in the Gulf. In response, JHQ could only fall back on comparisons between the Nimrod CONOPS and the British constitution: 'All points relevant to concept of ops already contained in numerous docs/ASMA messages/sigs.'

Although, for several months, Nimrod tasking orders defined their function as 'Direct Support' to CTG 321.1, the term 'Associated Support' more accurately described their role, and the tasking orders were amended accordingly in due course. Aircraft were directed by the Detachment Commander to patrol a specified area and provide contact information to naval units, but could be retasked while in flight by CTG 321.1. The routine surface surveillance operations were soon established on a sound footing, and their basic format proved so successful that it barely changed throughout the Nimrods' participation in the MIF. The only major adjustment occurred early in September, when the operations area was extended into the Persian Gulf. Thereafter, the two daily sorties were divided between the Persian Gulf and the Gulf of Oman.

The most formidable problem confronting the Seeb Nimrods lay in their integration into the multi-national MIF. As there had been no preparations for coalition operations of this type, integration was largely a matter of trial and error for both the Nimrod crews and other MIF units. A number of early complications involving naval surface and air units arose through a combination of inadequate communication and unfamiliarity with the Nimrod operations area. On 18 August, a Nimrod surprised HMS York by flying a short distance into the Persian Gulf, and Nimrod crews were subsequently told not to proceed beyond the Straits of Hormuz. On 24 August, when York re-tasked the second Nimrod sortie to locate an Iraqi tanker, Hittin, the Nimrod was unable to respond because the tanker was in an area patrolled by US Navy P3s based at Masirah. On 10 October, a recent arrival in the Gulf, HMS Gloucester, warned the Persian Gulf Nimrod to remain clear of all warships by 25 NM. Had the

Nimrod complied with this directive, it would have been unable to search much of its patrol area because of the large number of naval vessels in the vicinity.

It also took time for coalition naval units to familiarise themselves with the Nimrod operations area. The crew of a Nimrod that took off from Seeb on 4 September were completely ignorant of the fact that an Iraqi freighter, Zanoobia, was being intercepted in their patrol area by the USS Independence, her escorts and supporting aircraft. At the scene, the commander of Independence initially diverted the Nimrod, only for the CTG 150.2 (Admiral Fogarty, USN, on board the USS La Salle) to request air photographs of the interception. Back at the incident area, the Nimrod was then warned off by the USS Goldsborough because of the high level of local air activity, and was at one stage intercepted by F-14s from Independence. A week later, the Gulf of Oman sortie encountered a live-firing exercise by F-18s from Independence in the Nimrod patrol area and was forced to take evasive action. Again, Seeb had received no warning of this potentially hazardous activity. Similar difficulties were encountered with French naval vessels and aircraft.

Nevertheless, by 10 September, Wing Commander Neal was convinced that these early teething troubles were diminishing. 'As [the USN] become more used to our pattern/area of ops,' he wrote, 'we are having fewer problems ... Believe same evolution is taking place with French.' Sure enough, on 13 September, the detachment reported that 'two 6.5 hr sorties were completed yesterday with good co-ordination established with French ship Colbert.' Thereafter, difficulties were rare, but the arrival of new naval units in the Gulf who were unfamiliar with embargo duties invariably upset the equilibrium. In November, the USS Midway replaced Independence, creating further challenges for the Nimrod crews. On the 23rd, the Persian Gulf sortie was transiting through the Straits of Hormuz when it unexpectedly encountered Midway and was refused permission to overfly her. On 3 December, Midway organised a live-firing exercise in the Gulf of Oman operations area without informing Seeb. About 20 per cent of the area was not covered visually by the Nimrod sortie that day.

The establishment of so-called 'deconfliction' with coalition naval forces, although problematic, was assisted by the fact that all MIF units shared the common goals of rational co-ordination and collaboration. When established procedures failed,

mistakes were generally acknowledged and remedial measures implemented. However, in addition to the various incidents involving naval vessels and their supporting aircraft, and other maritime air reconnaissance elements, random encounters with an array of land-based aircraft were an intermittent feature of Operation Granby, and one that was both unexpected and unwelcome. As such aircraft were often hard to identify, follow-up action was difficult; without it, there was a strong chance of repetition.

Early on the morning of 20 August, a Nimrod operating in the Gulf of Oman detected two UAE Mirage F1s closing from the west. Attempts to contact the fighters failed, and they made several practice intercepts of the Nimrod before retreating westwards. The crew considered the threat serious enough to warrant evasive manoeuvres and the deployment of chaff. Less than a month later, the Persian Gulf Nimrod was investigating a surface contact at low altitude, when a Dornier civil aircraft carrying an ABC news team assumed an identical course only 200ft above. Again, evasive action was necessary.

During November, the Nimrods were involved in a series of menacing confrontations with other military aircraft. On the 4th, a Cyrano 4 airborne interception radar – possibly from a French or Omani aircraft – locked on to a Nimrod during the Persian Gulf sortie. The Nimrod descended to its minimum operating altitude and deployed chaff, and the radar broke lock. Six days later, the Persian Gulf sortie was bounced by two Tornados of unknown (but not British) nationality. The same Nimrod later detected a Cyrano 4 radar in lock-on mode; the Nimrod descended to minimum operating altitude and deployed chaff. On 23 November, a Cyrano 4 radar again forced the Persian Gulf sortie to perform evasive manoeuvres but did not lock on.

It is true that these problems virtually ceased after November; moreover, all the aircraft involved came from coalition or neutral countries, and none was overtly hostile. Nevertheless, such incidents could be very stressful and frightening for the Nimrod crews, and they illustrated clearly the danger of blue-on-blue engagements and lone actions by maverick fighter pilots from supposedly friendly nations. Of course, numerous preventive measures were taken, without which the situation would probably have been far worse.

With two Nimrod sorties being flown daily for the MIF, it was soon necessary to examine the resource implications of their involvement in the embargo against Iraq and Kuwait. Trade sanctions represent an uncertain means of achieving military objectives. As an expression of political condemnation, they may produce rapid results; otherwise, they are certain to be protracted. As we have noted, there was initially good reason to believe that sanctions might persuade the Iraqi government to withdraw immediately from Kuwait, but when, after one month, it showed no signs of doing so, the force elements committed to the MIF were left with no option but to plan for a long-term commitment to the Gulf.

The primary concern at Seeb, Kinloss and Northwood, was that the Seeb detachment was consuming a disproportionately high number of planned Nimrod flying hours, thereby forcing reductions in flying in the UK. On 17 September, Wing Commander Neal recorded that the detachment, representing only half a squadron, was flying half the total number of hours allocated to RAF Kinloss. The Nimrod crews had implemented several measures to reduce the time required to cover their patrol areas but were still under orders to remain airborne until their official 'off task' time.

At the end of September, Neal decided to challenge this ruling and proposed that his aircraft be allowed to return to base as soon as they had covered their patrol areas. This would reduce the detachment's monthly flying hours from 400 to 315. The UK Air Commander accepted this recommendation on the 30th. On the following day, two Nimrod sorties that would previously each have taken nearly six hours were completed in about four. Yet, to the responsible staff at the UK Air Headquarters and the Joint Headquarters, it seemed that further economies were achievable. If a small portion of the UK operations area was transferred to American MPA, the Nimrod task could be confined to just one daily sortie of maximum duration.

In the absence of a formal CONOPS, this was a difficult issue to address. However, even after JHQ had confirmed the Nimrod detachment's operational objectives, no substantial reduction in tasking could occur without the agreement of the Royal Navy, and there was good reason to expect resistance from this quarter. By the end of September, there had already been disagreements between the UK Air Headquarters and SNAME over Nimrod tasking, and some at Riyadh clearly believed that MPA were being extravagantly employed on occasion. On the 20th, the

coalition temporarily lost contact with three Iraqi tankers headed by Hittin, and SNAME promptly requested 24-hour Nimrod coverage in support of efforts to relocate them. In response, the Air Commander argued convincingly that SNAME's plan would not extend effective Nimrod coverage far beyond normal levels and he therefore questioned whether any change in routine flying was necessary, but SNAME insisted that the increase in tasking was essential to find the Hittin group as soon as possible. Clearly, any plan to reduce Nimrod flying to a single daily sortie would require SNAME's full agreement, and this would, in turn, be conditional on help from American MPA.

By 2 October, SNAME had been advised that Nimrod tasking was under review but had yet to be briefed in detail by the maritime air personnel at the UK Air Headquarters. Then, on the 6th, while negotiations between the UK and US naval authorities over new operations areas were still in progress, a badly worded signal from JHQ appeared to order a reduction of Nimrod flying to one sortie per day 'as soon as practicable'. The order was duly passed on to Seeb and implemented by Wing Commander Neal with effect from the 11th.

Predictably enough, when SNAME was presented with this *fait accompli* he was very unhappy. The decision to reduce the Nimrod sortie rate had been taken without his agreement and without confirmation of American coverage of parts of the Nimrod patrol areas. In the absence of a cast-iron guarantee of this coverage, it seemed to him that a single Nimrod sortie would fail to provide Task Group 321.1 with the support it required; the sortie rate of two per day should therefore continue. JHQ accepted his arguments and the second sortie was immediately restored. It is doubtful that SNAME would ever have agreed to the reduced sortie rate with enthusiasm, but he might still have acquiesced, however grudgingly, if arrangements with the US Navy had been finalised first.

Thereafter, the issue of Nimrod flying hours languished: the sortie rate continued at two per day for the duration of MIF operations. A further assessment of the impact of Operation Granby on squadrons in the UK noted that they were making important sacrifices to sustain the Seeb detachment, but concluded: 'The situation is not critical and, whilst we might expect gradual degradation of overall standards, careful management and selection of tasks should minimise the effects.' The impact of

operational flying in the Gulf may in any case have been exaggerated. A combination of transit, trials and training sorties for Operation Granby consumed substantial numbers of Nimrod flying hours in October and December, while the number of *operational* sorties remained stable at about 60 per month, and operational flying hours were significantly reduced.

If the sortie rate remained constant throughout the MIF phase of Operation Granby, so too did the average frequency of surface contacts and challenges per Nimrod sortie. The Seeb Nimrods flew 127 operational sorties between 15 August and 15 October, challenging 2,650 vessels, a rate of nearly 21 challenges per sortie. In November, 55 MIF sorties (there were also 5 SAR sorties) produced 1,266 challenges, or 23 challenges per sortie; in December, there were 61 MIF sorties and 1,402 challenges, 23 challenges per sortie (24 additional contacts were not challenged). However, this does not mean that the embargo failed to achieve its objective of halting all ocean-bound trade with Iraq and Kuwait.

In total the Nimrods challenged 6,325 ships during the MIF phase of Operation Granby: the overwhelming majority of these contacts were categorised as 'not significant'. It would therefore appear that the imposition of the UN embargo in August 1990 brought Iraqi and Kuwaiti maritime trade beyond the Gulf to an immediate halt, leaving the MIF to mop up the relatively small residue of actual or potential sanctions busters. Such vessels, described by the Nimrod crews as Contacts of Interest (COIs) were encountered with some frequency during the early stages of the operation. Between 8 September and 8 October (the first full month for which figures are available), 22 COIs were observed, as well as six possible COIs; the Nimrods also witnessed a variety of boarding incidents involving American, British and French naval vessels. In October, 19 COIs were observed, but the Nimrods encountered only five COIs in November. There could be no better illustration of the MIF's unqualified success.

Maritime Interception Force Operations: Conclusion

Of the three roles undertaken by the Seeb Nimrod detachment during Operation Granby, the MIF task was by far the most difficult. This was not so much due to the basic characteristics of the task: the Nimrod crews were, of course, extremely well trained and equipped for surface surveillance work. Rather, it was due to the

absence of planning and preparation, and the complexity of the operating environment. In mid-August 1990 there existed only the most general CONOPS for the Seeb detachment; in detail, virtually every aspect of the Nimrods' participation in the MIF was determined in theatre at the tactical level. This could only involve a considerable amount of trial and error, and it is to the credit of the Nimrod crews that they were rarely to blame when the established operating procedures broke down. Yet the success of their work depended on effective collaboration with a wide variety of naval units from several different countries, all of which had to familiarise themselves with the detachment's role and operating areas, and this process inevitably took time. During the Nimrods' first two months in the Gulf, therefore, they experienced a variety of deconfliction problems.

By October, these teething troubles had largely been overcome: the CONOPS was being clarified and the MIF was growing in both effectiveness and efficiency. Moreover, although there was some delay before the optimum degree of integration was achieved by the MIF, the embargo of Iraqi ocean-bound trade was entirely successful from the outset: the minimal challenge posed by sanctions busters during the early months of Operation Granby had virtually ceased altogether by November. The Seeb Nimrod detachment made an important contribution to this early victory for the coalition.

4. Search and Rescue

The Nimrod MR2's single most valuable quality was its versatility. Although, during Operation Granby, it was primarily engaged in surface surveillance duties, the Nimrod also assumed search and rescue (SAR) and direct support functions. The SAR role was assigned to the Nimrod at the end of September 1990. In November, and in January 1991, Nimrods participated in SAR exercises and in a number of live SAR incidents. By the onset of Desert Storm, a highly effective SAR organisation had been developed in which the Seeb detachment played an important role.

Given the prevailing assessments of the strength of the Iraqi armed forces in 1990, it is not surprising that coalition commanders expected high casualties after the outbreak of hostilities and planned SAR accordingly. In the event, casualty rates were exceptionally low, and there was little demand for the Nimrods' SAR capability. Yet this does not mean that the Seeb detachment's efforts were wasted. By its very

nature, SAR is a matter of contingency planning: it is an insurance that must exist even if, ideally, it is never used.

It was always likely that the Seeb Nimrods would be incorporated into coalition SAR planning in the Gulf. The Nimrod MR2 was an important element of the UK SAR organisation, and the Seeb Nimrods were all equipped with bomb-bay loaded SAR equipment. Loads varied, but each aircraft carried at least one life raft, two Containers Land Equipment (CLE) and one ASR set. The ASR sets were packed for the European theatre, but the CLEs contained desert survival equipment.

On 9 September, the UK Air Commander convened a meeting of the various RAF detachment commanders at his Riyadh headquarters to consider future roles and equipment requirements. Among other things, the meeting discussed a potential SAR role for the Nimrods in the event of hostilities with Iraq, and Wing Commander Neal subsequently took steps to integrate the Seeb detachment into the emerging USCENTCOM SAR plan. The Nimrods were too vulnerable to operate in the immediate battle area, let alone behind enemy lines, but they could assist with the location of aircrew brought down in the Gulf or the Saudi Arabian desert, and their status as the only long-range SAR platforms in theatre was particularly attractive to the Americans. On the 30th, the Nimrod detachment was incorporated into USCENTCOM's SAR organisation, with one aircraft and crew being maintained at 90 minutes readiness. From the same date, Nimrods could also be diverted to SAR from other duties.

There was general agreement about the new SAR role throughout the coalition command structure – at Seeb itself, at Riyadh and High Wycombe, and among the relevant US and naval authorities. The only dissenting voices came from the Nimrod crews, who felt that the detachment was being unnecessarily 'pushed' and that this additional duty might jeopardise flight safety. Given that one of the three Nimrods was often unserviceable, it also seemed possible that there would not be an aircraft available for the SAR crew to fly. However, in due course, the crews resigned themselves to their new task, and SAR exercises and incidents during the later stages of Operation Granby may well have provided a welcome diversion from the increasing monotony of surface surveillance sorties.

The SAR function was duly written into the Nimrod CONOPS in October, and on 1 November a formal Combat Search and Rescue Plan incorporating the Nimrod was issued by the USCENTCOM Joint Rescue Coordination Center (JRCC). The plan required the Seeb detachment to provide appropriate forces for SAR, and tasked the maritime cell at the UK Air Headquarters to function in a supervisory capacity and work with the JRCC to coordinate Nimrod SAR support for all US and coalition forces. A Rescue Coordination Centre (RCC) was also to be established at Seeb.

Over the next few days, USCENTCOM planned two SAR exercises involving the Nimrod, one at sea and one on land. The sea exercise was scheduled for 15 or 16 November in the Persian Gulf: a Nimrod was to be tasked with locating a downed aircrew and with dropping ASR equipment, after which it was to request assistance from the JRCC. It was then to provide top cover for the rescue vessel. The land exercise, entitled Imminent Thunder, was planned for 17 November and involved a range of SAR assets for the location, protection and rescue of two 'survivors'. The Nimrod was to function as Airborne Mission Commander, relaying a MAYDAY call to the JRCC, locating the survivors, and warning of the presence of simulated hostile forces.

Before the exercises could begin, however, the Nimrod detachment found itself involved in a live SAR incident. On 13 November, while the Gulf of Oman sortie was airborne, one of the RAF's Jaguars crashed in the Saudi Arabian desert. The airborne Nimrod was re-tasked onto SAR and proceeded to the crash site, after minor difficulties obtaining clearance to fly through UAE airspace. The Nimrod then took on the role of On-Scene Commander for all coalition assets involved, remaining at the site until it was relieved by a second aircraft from the Seeb detachment.

The SAR exercise of 15 November was slightly delayed by aircraft unserviceabilities, but was otherwise executed according to plan at the tactical level. The only minor problems involved command and control within the JRCC. By contrast, exercise Imminent Thunder on was more eventful. Everything went to plan until a sandstorm prevented the rescue helicopter from reaching the survivors; the exercise was thus transformed into a live incident. The survivors now faced a night in the desert with no outdoor equipment, so the Nimrod dropped Containers Land Equipment (CLE) – the

first ever occasion on which a Nimrod had dropped CLE in anger. The survivors later commented favourably on the contents of the pack.

The events of the following day were less satisfactory. The Nimrod was tasked with locating the survivors but failed to find them. It came so close that it was clearly visible from the ground, but ground-to-air communications could not be established, and the survivors were eventually rescued by helicopter. Subsequent investigations suggested that their radio had been faulty but also revealed discrepancies in the various records of their location, which only reinforced doubts about the Nimrod's navigation system and increased pressure for the installation of GPS.

The most important lessons learnt from these exercises concerned the Nimrod's capacity to communicate with other coalition units. First, while the Nimrod was equipped with US-compatible secure communications equipment, the RAF did not have access to US national cryptography; its release to the Nimrod detachment was subsequently approved after a delay of six weeks. Second, the Nimrod had no secure High Frequency (HF) communications link with the JRCC. Signals which, in Combat SAR (CSAR), had of necessity to be secure, had followed a convoluted path through the UK Air Headquarters and Seeb before finally reaching the aircraft. As the Nimrod was expected to assume the role of Airborne Mission Commander for SAR operations following the outbreak of hostilities, it appeared all the more important to rectify this deficiency. Following some haggling over the cost of new equipment, five Park Hill secure HF sets were located within the existing Ministry of Defence (MOD) inventory and rushed to Kinloss for installation on a stand-alone basis.

Otherwise, the Nimrods were felt to have performed well in both the exercises and the live incidents. Wing Commander Neal readily accepted that the Nimrod was 'not a brilliant search ac' and admitted to doubts about its effectiveness over land; but after Imminent Thunder he was less sceptical. The role of Airborne Mission Commander was 'no big deal for Nim crew', he wrote, 'and allows AWACS to get on with fighting the air war.'

ABCCC fed A10s to Nim for combat tasking and was clearly relieved to have Nim controlling SAR incident leaving ABCCC to concentrate on big picture . . . We were the only ac on scene with survival gear when needed for real. Do not see us doing that behind enemy lines, but with CAP above Nim could go close to border.

The next exercises were scheduled for the end of December and the first week of January. The land exercise of 30 December was a straightforward affair that saw no repetition of the problems of Imminent Thunder. The sea exercise, entitled Candid Hammer, was more complex. Again, numerous coalition force elements were involved, this time in electronic intelligence activities and radar surveillance as well SAR and CSAR, and the exercise was located in simulated hostile and non-hostile environments in the vicinity of oil fields and rigs in the northern Arabian Gulf. To participate, the Nimrod required clearance to fly up to 28.30°N and permission to refuel at Bahrain, access to US cryptography and assurances of CAP cover; these preconditions were all satisfied in due course.

On the first day of Candid Hammer, the single Nimrod engaged in MIF duties was re-tasked on to SAR when a merchant vessel was reported to be in difficulties. The Nimrod duly found a Cypriot ship, Demetra Beauty, low in the water with two lifeboats alongside. Contact was established with the ship's master, who stated that 'he had possibly hit a mine and was possibly going down', and that there were 23 people on board. The Nimrod contacted a nearby tanker, Patriotic, and an American warship, USS Fife, and remained at the scene until Patriotic arrived. The Fife was also in attendance by the time the Demetra Beauty's master decided to abandon ship.

Candid Hammer itself ran entirely according to plan. On 3 and 4 January, Nimrods flew medium-level radar reconnaissance missions, covering the Kuwaiti coast north of 28.30°N and out to 50°E. On 4, 5 and 6 January a Nimrod flew three CSAR sorties in conjunction with Task Group 151.3 ships and helicopters. Although relatively simple exercises, they provided valuable training opportunities and much useful

information. As always, they revealed scope for minor improvements, but procedures and communications worked well.

By the onset of Desert Storm, therefore, the Seeb Nimrods had been incorporated into a well prepared and highly effective SAR organisation capable of dealing with a wide range of operational contingencies. Had the combat capability of the Iraqi armed forces subsequently matched coalition expectations, there is no doubt that this organisation would frequently have been deployed. However, in the event, coalition casualties were so light that there were very few demands for SAR, and the Nimrods soon became engrossed in their new direct support role instead.

As early as 22 January, the Nimrod Detachment Commander sought permission to relax the 90-minute state of readiness for SAR, which had been maintained since the end of September. In rejecting his request, the UK Air Headquarters acutely defined the dilemma that always surrounds SAR: the capability must exist, even if it is not used:

Recognise disappointment at lack of CSAR calls but SAR was ever thus. We are locked into USAF CSAR plan and they would far rather we reduced the standby time from 90 to 60 mins - less if it were possible . . . We should not propose to seek a relaxation of our readiness at this stage.

On 29 January, a Nimrod was finally involved in a live SAR incident, when an Omani Jaguar crashed in the desert. The Nimrod acted as On-Scene Commander to four SAR helicopters, but the crash site was not located, and the mission was subsequently taken over by the Omanis. On 3 February, a Nimrod again assumed the role of On-Scene Commander after an American helicopter was brought down. Although it was eventually located, sadly there were no survivors.

Search and Rescue: Conclusion

Until the onset of hostilities in the Gulf in January 1991, there was undoubtedly a tendency within the coalition to overestimate Iraq's military potential. Contingency plans had therefore to be prepared for casualty rates significantly higher than those ultimately sustained, among them the establishment of USCENTCOM's SAR organisation. With their range of SAR capabilities, there were many ways that the

Nimrods could contribute, and the Americans gratefully accepted the Detachment Commander's offer of assistance in September.

Although the SAR role assigned to the Nimrods failed to materialise during Operation Desert Storm, their contribution during earlier SAR episodes proved highly effective. In a series of exercises and live incidents, Nimrods acted as On-Scene Commander and as a communications platform for other SAR units, helped to locate crash sites, assisted in the rescue of 23 people from a foundering merchant ship, and, for the first time in a live SAR mission, dispensed CLE. The Seeb detachment would have demonstrated an equally impressive capability if a significant demand for SAR had arisen in January 1991, and their potential contribution was reflected in the fact that they were required to maintain one Nimrod on 90-minute standby for SAR from 1 October through to the ceasefire with Iraq.

5. Direct Support

By mid-December 1990 the 'Desert Shield' phase of Operation Granby was nearing its end. It had become clear that neither international condemnation nor UN sanctions would persuade Iraq to withdraw her forces from Kuwait; the only alternative was military action. The cessation of MIF operations freed the Seeb Nimrods for alternative roles: in mid-January, they commenced direct support (DS) ASUW operations under the TACON of the US Navy Task Group 154. These operations continued until the Nimrod detachment was withdrawn from Seeb in April.

Consideration of this new role for the Nimrods began in December 1990. On the 16th, Wing Commander Neal and his designated successor, Wing Commander Andrew Wight-Boycott, attended a conference onboard the USS La Salle at which the Americans proposed Nimrod participation in offensive operations in the northern Persian Gulf. The primary aim was to locate Iraqi fast patrol boats, which posed a significant threat to coalition naval units. The two detachment commanders welcomed the American initiative, but there were no further developments until early January.

In the meantime, the Nimrod detachment's future role remained the subject of much uncertainty and, at Seeb, no little concern. It was obvious that the MIF task was nearing completion; this would potentially leave the Nimrods with nothing except

SAR. Wing Commander Wight-Boycott subsequently recalled 'frustration and exasperation' within the detachment at this time. After Exercise Candid Hammer, he took the initiative by proposing a reduction in the number of MIF sorties to one per day and a second Nimrod sortie involving medium level radar surveillance in the northern Persian Gulf.

However, on 9 January, before these arrangements had been approved by the UK Air Commander, Wight-Boycott attended another meeting with the US Navy. The Americans expressed concern over the threat posed to their carrier battle groups by Iraqi fast patrol boats (FPBs) and announced that they hoped to maintain 24-hour surface surveillance by MPA in the northern Persian Gulf to assist with their detection and elimination. Yet they did not have enough P3s to implement this task alone. As Wight-Boycott later commented:

Although their natural inclination was to make it an all-US Navy operation, they realised that they couldn't do it, and so they asked us if we would assist them. That was exactly what we were dying to do. So we worked out a very simple plan – that we would take the eight hours from the afternoon until past midnight and they would do the rest.

On the same day, he advised the UK Air Headquarters that a formal request for assistance would soon be received, and strongly recommended acceptance of the American proposals. JHQ, SNAME and the naval and air staffs at Riyadh quickly agreed to the new role, and the UK Air Commander approved it on the 14th. During the following week the northern limit of the Nimrod operations area was extended first to 28.30°N and then to 29°N.

The DS role subjected the Nimrod's operational capabilities to a rigorous test. Although their primary task, the establishment of a radar surface plot from 29°N to the enemy coast, sounds simple enough, this area was crowded with rigs, well heads, channel marker buoys and wrecks, which were all difficult to distinguish from small naval vessels. Stationary vessels close to the coast proved particularly hard to identify from stand-off ranges. Only by making careful day-to-day comparisons of the surface picture was it possible to locate new contacts. Nimrods then provided regular

updates of the contact's position, course and speed to allow them to be identified by the Surface Unit Combat Air Patrol (SUCAP), using infrared equipment. Sometimes the Nimrods also vectored the SUCAP to the contact if it was assessed to be hostile.

From a tactical perspective, DS and MIF tasking could hardly have been more different. Within the space of 24 hours, the Nimrods were switched from low-level daytime sorties to medium-level (up to 14,000ft) flying at night. Although operating at this altitude facilitated the identification of new surface contacts, flight safety and self-protection were also important considerations: Iraqi SA7s might have been deployed on oilrigs. Frequent minor changes in radar settings were also necessary. Initially, the Nimrods flew north-west to 28°N and confirmed their identity with coalition units in the area, before moving further north and entering a holding pattern prior to tasking. In a region crowded with air and naval forces, the greatest care had to be taken to ensure deconfliction. Nimrods always flew with their navigation and anti-collision lights on, and many routine flying procedures were simplified to reduce the risk of accidents. As Wight-Boycott again recalled:

The only way we could fight out there and be safe was to keep it simple ... All the old rules about changing your call signs so that no one could identify you went out the window. We kept to the same call sign 'Dylan' day in day out because everyone knew that was the Nimrod.

The Nimrod detachment mounted their first DS mission under the TACON of CTG 154 on 15 January; it was uneventful. However, after the outbreak of war, Nimrods became involved in several engagements with Iraqi naval vessels. On 21 January the second sortie located four COIs and provided regular situation reports on their position to a SUCAP, which subsequently attacked all the targets. On the following day, the second sortie identified three fast-moving contacts, tracked their progress, and duly passed them on to an American P3 at the end of the mission. On the 24th, the first sortie located an Iraqi salvage ship, which was then attacked by an American A6.

On 30 January, the second sortie located two COIs during a survey of the Kuwaiti and Iraqi coast. On 4 February, Nimrods reported three new contacts and monitored the activities of two others. On the 6th, the first sortie detected and reported an Iraqi

fast patrol boat, which was subsequently destroyed by the SUCAP. Two further surface vessels were destroyed by the SUCAP during the second Nimrod sortie.

On 7 February, the Nimrod operations area was extended all the way up the Gulf. From then on, they adopted a patrolling position about 30 miles off the Kuwaiti coast opposite Faylakah island, flying in a figure of eight so that they always turned towards the area they were monitoring to keep it illuminated by radar. From here, they could track supply boats making the 'chicken run' between the island and the coast. One such vessel was located by a Nimrod and attacked by an A6 that very day. On 10 and 11 February, Nimrods gained four more contacts that were passed to the SUCAP, and they vectored attacking forces on to another target en route for Faylaka on the 15th. The SUCAP also struck on both the 19th and the 22nd, again targeting vessels located by RAF Nimrods.

A review of the Nimrod detachment's role during the final week of February confirmed that they would still be required to provide DS to CTG 154.3 for as long as the carrier battle groups remained in the Persian Gulf. However, from 26 February, their sortie rate was reduced to one per day. Thereafter, Nimrod operations were progressively scaled down. From 11 March, the Seeb detachment provided twelve hours of on-station coverage to the carrier battle group and flew a single five-hour sortie every other day. From 24 March, Nimrod flying was reduced to 80 hours per month, comprising 60 hours DS to CTG 154.3 and 20 hours training. On 10 April the MOD authorised the Nimrods' return to the UK; one last DS sortie occurred on 15 April, and the final Nimrod withdrew from Seeb two days later.

Direct Support: Conclusion

The onset of DS operations in January 1991 involved a complete change in Nimrod tasking, but the new assignment was in many respects more straightforward than the challenge facing the Seeb detachment in August 1990. By the time they assumed the DS role, the Nimrods were well established in theatre and familiar to the vast majority of coalition naval units; deconfliction remained a serious concern, but rarely presented significant problems. Furthermore, all the necessary command and control and base facilities were in place at Seeb. In flight, the Nimrods operated under the TACON of a single naval task group, with whom new operating procedures were quickly established. Although the Nimrod crews were not specifically prepared for

this type of operation, their equipment and training proved reasonably well-suited to the task. Hence, the transition to DS was relatively simple, and the detachment delivered impressive results throughout Desert Storm.

6. Command and Control

Historically, the command and control of MPA has often posed problems. MPA may, of course, contribute to air and sea operations; both air forces and navies therefore have an interest in their deployment. In many countries, the USA being an obvious example, MPA are primarily viewed as naval assets that should operate under naval control. Elsewhere, maritime air operations have been viewed as an air force responsibility – notably in the UK. Nevertheless, it has always been recognised that close co-operation between the RAF and the Royal Navy is of paramount importance to the success of such operations, and the Navy has for this reason exercised a considerable influence over the employment of MPA.

In the past, the precise division of authority between the RAF and the Royal Navy has sometimes been a cause of dispute. The joint location of 18 Group (formerly of Coastal Command) headquarters and CINCFLEET's headquarters at Northwood undoubtedly improved the situation, but 18 Group was not incorporated into the Operation Granby command chain in August 1990. It is therefore not entirely surprising to discover that inter-service differences regarding MPA command and control began to reappear while the MIF was being established. They were only resolved in the final weeks of September 1990, when the Granby chain of command was completely reorganised.

As we have seen, preliminary command and control arrangements for the Nimrod detachment were drawn up on 10 August. Operational command of the detachment was vested in the Joint Commander, while the UK Air Commander exercised operational control. While the detachment was establishing itself at Seeb, TACON was to be exercised by the Detachment Commander, Wing Commander Neal. However, the command and control provisions also stated that 'ACBFAP¹ may delegate tactical control to CTG 321.1 or other naval forces as required.' This was a somewhat ambiguous statement. On one hand, it could have been taken to mean

1. ACBFAP – Air Commander British Forces Arabian Peninsula. This term was used early in the campaign for the UK Air Commander in the Gulf.

that naval units might exercise TACON over individual MPA engaged in direct support operations while they were on task: they certainly did so with the full agreement of the UK Air Commander on numerous occasions. On the other hand, it was open to the more contentious interpretation that CTG 321.1 had been assigned the role of general tasking authority over the Nimrod detachment.

The essence of the problem was that task Group 321.1, under SNAME, had been deployed in the Gulf for some years under the auspices of the Armilla Patrol. At the start of Operation Granby, the patrol immediately became part of the multi-national MIF but was not incorporated into the Granby chain of command; it remained directly responsible to CINCFLEET. In short, the UK initially failed to establish a unified command structure for all deployed forces in the Gulf. This anomaly, although quickly recognised, took more than a month to resolve. In the meantime, the Nimrod detachment had to perform a precarious balancing act between the two chains of command. The detachment had a designated role in Operation Granby, which the UK Air Commander was determined to uphold, but it was viewed by the Navy command chain as a maritime asset primarily deployed in support of CTG 321.1.

It is not difficult to understand why the TACON issue became so important to the Royal Navy. In peacetime, CINCFLEET was accustomed to influencing maritime air reconnaissance activity through 18 Group Headquarters at Northwood, but this channel was suddenly closed in August 1990. Foreseeing the problems that this would create, the AOC 18 Group recommended that operational control of the Nimrods should remain at Northwood. In his view, this 'would mirror normal peacetime operations which are well known, understood and practised'.

This seems sensible to me given that the role of the Nimrod detachment is to support the maritime operations in the Gulf and that RN C2 remains CINCFLEET to the CTG. Inevitably the RN are in constant discussion with 18 GP over detail of the maritime picture and operations and expect us to speak with an authority which we at present do not have. We are also providing much operational and administrative support for the detachment.

Such opinions were not confined to 18 Group. On 18 August, the maritime air staff at JHQ addressed a memorandum to their counterparts at the MOD couched in very

similar terms. The documents do not record any response to these initiatives, but 18 Group informed Kinloss and the Seeb detachment on 23 August that 'current C2 arrangements are likely to continue but with TACON vested in CTG 321.1.' The AOC had apparently accepted that this would answer most of his objections.

Within a few days of the first Nimrod's arrival at Seeb, the transfer of TACON to CTG 321.1 was under active consideration. However, on 15 August, the hand-over was postponed because of difficulties in establishing effective two-way communications between Seeb and HMS York, and there were further problems the next day. 'Basically, you lack ASMA and we lack a COMCEN, but are working on both,' Wing Commander Neal signalled to CTG 321.1 on the 18th. 'As soon as we can regularize good comms from Nimdet OPS HQ to you at sea then I will advise CBFAP² formally to chop my TACON to CTG 321.1.' On 23 August, poor communications between Seeb and York again prevented the transfer.

During these early days, TACON remained with Wing Commander Neal for entirely practical reasons. Increasingly, though, maritime air reconnaissance officers in both the Gulf and the UK began to question the wisdom of transferring TACON to CTG 321.1 on other grounds. On 26 August, the AFOPS maritime staff at the MOD argued that the division of command and control between Armilla and Granby forces could not be maintained in the event of hostilities with Iraq; on this basis, the case for transferring Nimrod TACON seemed questionable. 'When transferred, TACON of MPA will be with SNAME, who has OPCON of Armilla Naval assets. This is, presumably, workable in the current situation, but in hostilities it surely would be preferable to have the same command and control chain for all the UK maritime assets.'

Within the UK Air Headquarters, Riyadh, there were more immediate concerns. As part of the UK's contribution to Operation Granby, the Nimrod detachment could potentially conduct a wide variety of tasks in co-operation with coalition units from other countries, notably the United States. The detachment established a close working relationship with USS Independence during the early stages of the embargo: Independence was instrumental in the development of routine operating procedures

2. CBFAP – Commander British Forces Arabian Peninsula. This term was initially used for the commander of all deployed UK forces in the Gulf, at this stage still Air Vice Marshal Sandy Wilson.

for the Nimrods following their arrival in the Gulf and, for several weeks, they enjoyed better communications with Independence than HMS York. They passed all surveillance information to the American vessel as a matter of course.

On 27 August, a Nimrod was retasked in response to a request from Independence; on 4 September a second sortie was flown for the US Navy. After the Nimrods flew their first sorties in the Persian Gulf, their value to the Americans increased further. They were soon working in close liaison there with the USS Antietam and USS Wisconsin. On 19 September, a Nimrod sortie was again re-tasked at the request of Independence. In the event of hostilities, it seemed likely that Nimrods would provide surface surveillance for American naval vessels in the Gulf of Oman.

In short, the Nimrod quickly proved itself an extremely versatile asset, providing valuable information to several coalition navies, and mounting sorties for the US Navy at very short notice. Moreover, from 8 September, it performed these functions in a larger operational area than was served by other MPA. All of this was facilitated by the flexibility of command and control arrangements in theatre. By contrast, if TACON was vested in CTG 321.1, it seemed that the Nimrods' services might be far more narrowly confined to operations in close support of the Royal Navy's tasking vessel, while the broader requirements of other navies were neglected.

Such considerations were soon absorbed into the broader debate on Operation Granby command and control, which was already ongoing in London and High Wycombe. During the following weeks, the pressure to establish a genuine Joint command, encompassing all three armed services, mounted inexorably. As it did so, naval demands for the transfer of Nimrod TACON to CTG 321.1 grew increasingly insistent, and the counter-arguments in turn became more resolute.

The practical difficulties that initially prevented the hand-over of TACON had still not been overcome by the end of August. HMS York was spending much of her time at sea in the Persian Gulf, while the Nimrods were still operating in the Gulf of Oman; communications between the two regions remained very unreliable. With SNAME's full agreement, TACON therefore remained with the Nimrod Detachment Commander. However, after SNAME's request for Nimrod sorties in the Persian Gulf was rejected on 3 September, he declared his intention to obtain TACON of the detachment. On the 10th, he confirmed his immediate readiness to take TACON,

and he repeatedly threatened to do so subsequently, despite continuing communications problems and at least one clear warning that the UK Air Commander had not approved the transfer. Finally, on the 14th, a further signal from Riyadh left SNAME with no room for doubt about the Air Commander's position:

CBF believes that your request is inappropriate in view of wider issues and in order to avoid any conflict in tasking, TACON remains as at present, i.e. at Seeb.

Neal, who had earlier been preparing to relinquish TACON, now found himself under orders to retain it.

The reference to 'wider issues' suggests that the question of Nimrod TACON had become inextricably bound up with the broader debate on Operation Granby Command and Control, and this was indeed the case. On the very same day, a memorandum prepared by 18 Group Headquarters described the 'ongoing debate about who should exercise control of Nimrod MR operations' and acknowledged 'the RN view that the UK maritime task organisation in the Middle East should include the Nimdet for tasking purposes.'

Based on the statement ... that Tactical Control could pass to CTG 321.1 as required, CINCFLEET has promoted this transfer of control ... ACBFAP is equally convinced that the present arrangements are satisfactory and, indeed, there are strong reasons for retaining the status quo.

The greater urgency of the Navy's demands in theatre coincided with discussions between the Chiefs of Staff (COS) in the UK regarding a total revision of command and control arrangements in the Gulf. The CNS favoured the continued division of either full command or operational command between the Joint Commander and CINCFLEET, whereas CDS directed that full command should be unified under the Joint Commander. However, the precise means by which this unification was to be accomplished remained unclear for some days, and it was at this time that SNAME's campaign to obtain TACON of the Nimrod detachment reached its zenith. 'Am annoyed that RN keep wanting to take TACON of whole det[achment],' Wing Commander Neal recorded on 17 September. 'I hope this C2 debate will stop once

RN subsumed within JFHQ org[anisation].’

On the whole, it did. On 13 September, after a further meeting of the COS, CDS directed that Operational Command of all UK forces in the Gulf be vested in the AOC-in-C Strike Command, as Joint Commander. Operational control, previously vested in the Air Commander, would now be held by the Commander British Forces Middle East (CBFME) – the Joint Forces Commander in theatre – leaving tactical command of deployed RAF forces to the Air Commander. When a formal CONOPS for the Nimrod detachment was drawn up in October, it confirmed that TACON would be retained by the Detachment Commander, but that TACON of individual aircraft engaged in direct support operations might be delegated to the naval units concerned throughout the on-task period.

The reorganisation of the Granby command chain substantially settled the controversy over Nimrod command and control. The potential for dispute remained only at the operational control/tactical command interface. Both SNAME and the Air Commander now held tactical command of their respective force elements and reported directly to the CBFME. There was thus some potential for SNAME to raise maritime air reconnaissance matters directly with the CBFME, bypassing the Air Commander in the process. This actually happened twice during December, after the Air Commander rejected SNAME’s request for an extension of the Nimrod operations area. However, when the Nimrod detachment became involved in ASUW operations against the Iraqi navy in mid-January 1991, TACON was transferred to the Commander of the US Task Group 154 with the full agreement of both the Air Commander and SNAME.

Command and Control: Conclusion

At the beginning of Operation Granby, British forces in the Gulf were divided between two command chains, one centred on JHQ at High Wycombe, the other on CINCFLEET at Northwood. These early arrangements unfortunately provided scope for TACON of the Nimrod detachment to be removed entirely from the Granby chain of command, a transfer that appealed to senior naval officers after the normal channels of naval influence over maritime air operations were closed. The result was a dispute over Nimrod TACON in some ways reminiscent of the Second World War controversies surrounding the control of Coastal Command. The arguments only

ceased after all deployed UK forces in the Gulf were placed under the command of JHQ. At the heart of the problem lay the lack of planning or preparation before the operation: almost inevitably, joint command arrangements established without notice for an entirely unexpected contingency left something to be desired and had to be adjusted over time. The establishment of the Permanent Joint Headquarters at Northwood in 1996 has since helped to prevent similar episodes.

7. The Operations Area

The scope of the Nimrod detachment's contribution to Operation Granby was largely determined by the geographical area of operations to which it was assigned. To enhance the Nimrods' role, this area was almost continuously enlarged between August 1990 and February 1991. Nimrod operations were initially confined to the Gulf of Oman as far north as the Straits of Hormuz; early in September 1990, the operations area was extended into the southern Persian Gulf, as far north as 26.30°N. Later in September, the limit was moved to the western Persian Gulf (28°N), and the area was extended into the northern Persian Gulf to 28.30°N at the beginning of January 1991, before finally reaching 29°N at the end of the month. Finally, at the beginning of February, all restrictions outside Iraqi and Kuwaiti territory and Iranian territorial waters were removed.

In the complex operational environment of the Gulf, the process of extension was by no means straightforward; indeed, careful deliberations were required before extensions were approved. It was necessary to strike a balance between the operational advantages of flying further north (in terms of improved surface surveillance) and the risk posed by hostile forces to the vulnerable Nimrod.

Generally speaking, at each successive stage of the operation area's extension, the Royal Navy and the RAF adopted opposing perspectives in this argument. The Senior Service repeatedly emphasised how more northerly operations could improve the surface surveillance picture, but the RAF proved more cautious and sought to limit the risk to aircraft and crew. Large, slow (originally little more than a modified version of the Comet airliner), and poorly equipped for self-defence, the Nimrod would have represented an easy target to hostile combat aircraft. Moreover, the possibility of interception was by no means the only concern: airspace control became increasingly problematic as more and more coalition aircraft crowded into

the Gulf, and the risk of blue on blue remained high. It took time to establish effective joint (inter-Service) and combined (multi-national) communications systems and operational procedures; the sensitivities of Gulf states like Iran and the United Arab Emirates had also to be acknowledged.

Finally, behind the early debates on the operations area lay the issue of who exercised TACON of Nimrod MPA. It is no coincidence that, while the Navy was attempting to secure Nimrod TACON during the first month of Operation Granby, it was also at loggerheads with the RAF over the north-western limit of maritime air reconnaissance operations.

By the final week of August, the Nimrod detachment was flying two surface surveillance sorties per day in the Gulf of Oman and had established a sound working relationship with HMS York and the USS Independence. SNAME, on board York, initially cautioned against any extension of Nimrod operations into the Persian Gulf, for coalition command and control there was far from robust. Without it, there was a significant danger of fratricide or mid-air collision. Then, on 28 August, the Royal Navy's Flag Officer Flotilla 2 (FOF2), who was visiting the Armilla Patrol, met Wing Commander Neal and suggested that the Nimrods *should* operate in the Persian Gulf in support of naval vessels.

Neal advised him that the Nimrods could operate there, but he also drew attention to SNAME's reservations, and warned that the integrity of the Gulf of Oman merchant shipping plot might be jeopardised by the proposed change in the operations area. FOF2 then stated that he would discuss the matter with SNAME, his aim being 'to convince York to be more demonstrative in showing the Union Jack in the P[ersian] G[ulf]'; he would, however, respect the views of SNAME and Wing Commander Neal if such a venture proved unsafe or unwise.

There were no proper grounds for FOF2 to intervene in this way. As the maritime air reconnaissance staff at AHQ Riyadh quickly pointed out, any extension of the Nimrod operations area had to be approved by the UK Air Commander, and this would still have been the case if TACON of the Nimrod detachment had been delegated to CTG 321.1. Moreover, such authority as SNAME exercised over the detachment's activities stemmed only from his position as commander of UK naval forces in theatre, and was exercised entirely on the Air Commander's behalf. It was

not the intention that officers senior to SNAME in the Armilla command chain should seek to influence the deployment of MPA or any other assets assigned to Operation Granby. FOF2 should have discussed his ideas with the Air Commander, rather than Neal or SNAME, in the first instance.

Nevertheless, the following day, FOF2 met SNAME and persuaded him that the Nimrod operations area should be extended into the Persian Gulf. On 30 August, Neal received a signal from SNAME that stated: 'Believe time is right for marpat inside Gulf, as far west as 052E.' Neal found himself in an awkward position. He had no desire to jeopardise relations with the Navy by refusing SNAME's request outright, but he doubted that significant operational benefits would accrue from sorties in the Persian Gulf. 'Believe Nimrods can perform best operating in the G[ulf] o[f] O[man], not P[ersian] G[ulf],' he told the Air Operations Centre at Northwood on 1 September. '[They] can act as early warning in one direction, and safety net in the other.' However, he professed himself 'most happy to show presence by sorties on opportunity basis, and to operate when required against any specific target or with specific tasking'.

SNAME would not accept this position. Although agreeing with Neal that the Nimrods could best be employed in the Gulf of Oman, he wished to prove their ability to work in the Persian Gulf so they could be sent there immediately if operational circumstances changed at short notice. At this stage, the UK Air Commander intervened. On 2 September, SNAME was advised that the 'Air Cdr sees no operational justification for Nimrod sorties in the PG at present.' There were, moreover, diplomatic clearance and air traffic control problems in the region that ruled out 'any air ops which are not essential in southern PG'. In response, SNAME reiterated his previous arguments and announced that he would assume TACON of the Nimrod detachment as soon as procedures for Persian Gulf operations had been proved.

This unseemly dispute did not bode well for the development of maritime air reconnaissance operations in the Gulf. After less than one month in theatre, the RAF and the Royal Navy were, not for the first time, at loggerheads over the deployment of MPA, a resource in which they were both deeply interested but over which the RAF exercised ultimate control. The differences between the two services at this

stage appeared irreconcilable, yet they seem to have arisen more from an absence of personal dialogue and consultation than from any more fundamental disagreements. After a meeting at Headquarters British Forces Middle East (HQBFME)³ on the morning of 5 September, the Air Commander performed what Neal described as a '180 degree about face'. SNAME was advised that the 'Air Cdr is v[ery] keen that Nimrods carry out PG area famil[iarisation] to demonstrate op[erational] capability and prove co-op[eration] procedures.'

The documents provide no explanation for this remarkably abrupt volte face. It may be that the Navy's ideas were initially misunderstood by the Air Commander or that the two parties were acting on the basis of different information or intelligence; it is also possible that the Air Commander resented the manner in which he had initially been bypassed by FOF2 and therefore decided to block the Navy's proposals. Whatever the truth is, the incident demonstrated that apparently major disputes could be overcome quite easily through face-to-face discussions. What was lacking, at this stage, was adequate consultative machinery, nor had Task Group 321.1 and the Nimrod detachment been properly integrated into the Granby chain of command.

Despite his initial reservations, Wing Commander Neal welcomed the start of Persian Gulf sorties, for the Gulf of Oman was becoming increasingly crowded; the arrival of the French aircraft carrier *Clemenceau* was especially problematic. 'French say one thing then do the opposite,' Neal complained on 6 September. The first Persian Gulf sortie was flown on 8 September, and the Nimrods subsequently established a new daily routine. The sortie rate continued at two per day, but one was now flown in the Persian Gulf while the other remained in the Gulf of Oman.

The Nimrods were the first MPA to operate inside the Persian Gulf during Operation Granby. They quickly established good working relations with naval vessels in the area, but their northern flying limit, 26.30°N, soon proved inadequate. On 19 September, coalition maritime forces were alerted to the possibility that three laden Iraqi tankers moored in the northern Persian Gulf might challenge the trade embargo. To establish a clearer picture of their movements, Neal proposed to HQBFME that the Nimrod operations area be extended north to 27.30°N.

3. The HQBFME had by this time evolved out of the HQBFAP and was UK Joint Forces Headquarters at Riyadh.

The request was quickly overtaken by events. The Iraqi tankers – the Hittin group – moved unexpectedly, and contact with them was temporarily lost. On the following day, HMS Battleaxe, part of CTG 321.1, requested that the Nimrods be authorised to fly up to 27.30°N, pointing out that almost continuous CAP and AWACS cover would ensure that they were in no danger. Permission was immediately granted, and the Nimrods flew four sorties in the Persian Gulf on the night of 20-21 September in an attempt to relocate the missing tankers.

At the same time, the Ministry of Defence extended the northern limit of British naval operations to 28°N, and this measure was soon also applied to the Nimrods. The UK Air Commander believed that they should be allowed to operate up to the same latitude as the ships they were supporting, when necessary. In practice, however, many sorties did not proceed further north than 27.30°N. 'You are not to transit north of 2730N unless you have positive 2-way contact with a RN/US warship,' Neal was told on the 27th. The continuing restrictions were 'to ensure 100% safe operations in northern PG.'

Judged by the standards set earlier in September, the move from 26.30°N to 28°N was uncontroversial. Nevertheless, the northerly extension of the Nimrods' operations area generated further concerns for their safety, for any request for them to proceed beyond 28°N would imply the violation of an Iraqi exclusion zone, which began at 28.20°N, and was certain to encounter opposition. The view of the maritime air cell in the MOD was, for example, that 'operating north of 28N would put the Nimrod at risk from a fighter threat.' At this stage, well before the outbreak of hostilities with Iraq, there was no coalition fighter cover over the northern Persian Gulf, and the MOD therefore decided that 'the risk of pressing beyond 28.20N is not justified.'

For the next two months, the Nimrods continued to fly as far north as 28°N but no further. However, early in December, SNAME renewed the debate on their operations area, declaring himself unhappy with the surface picture north of 28°N and requesting authorisation for the Nimrods to fly up to 28.30°N. The RAF command chain seriously considered this proposal but noted that the southern border of Kuwait was on the same latitude. Moreover, it did not appear that substantial operational benefits would accrue from an increase in the northern flying

boundary of just 30 nautical miles. The UK Air Headquarters therefore advised the Navy that the extension could not be approved 'unless there was a specific task to do and specific and dedicated defensive measures were taken in support of the Nimrod'.

In response, SNAME bypassed the Air Headquarters and directly approached the CBFME, Lieutenant General Sir Peter de la Billiere. He was quickly convinced by the case in favour of extension, and, on 11 December, passed on SNAME's request to JHQ. It was claimed that US MPA regularly flew up to 28.30°N. 'In order to align with US practice and to allow (A) better surveillance of northern Gulf [and] (B) closer integration with USN assets ... request UK area of operations be adjusted.'

JHQ now spoke with more than one voice. There was some support for the Air Commander from an operational standpoint, although this was by no means unanimous, but a further question arose: at what level of the command chain should a decision on the Nimrod operations area be taken, given the risks potentially involved? After two days of discussion, JHQ decided to refer the issue upwards to the MOD, albeit with a strong recommendation that the extension to 28.30°N be approved. Unfortunately, whether by error or design, JHQ's signal bypassed the maritime staff at AFOPS, and they were annoyed to discover, some days later, that they had not been consulted.

Meanwhile, the Navy returned to the charge. On 14 December, in a second direct approach to CBFME, CINCFLEET's representative at JHQ suggested that Nimrods might loiter at the very limit of their operations area to collect data on Iraqi mining activities in the northern Persian Gulf. This concept was strongly opposed by the Nimrod Detachment Commander and the UK Air Headquarters on the grounds that, to be of any value, such sorties would have to be flown continuously – an impossible task with the resources available. They also doubted that the operational benefits would outweigh the increased risk to both aircraft and crew.

At this stage, the intervention of the US Navy added a further dimension to the debate. On 16 December, Neal and Wight-Boycott, attended the conference on the USS La Salle at which the Americans proposed that, in the event of hostilities with Iraq, the Nimrods could assist with the location and destruction of Iraqi fast patrol boats in the northern Persian Gulf (see above). The two RAF officers enthusiastically

embraced this new plan but recognised that clearance would be required for the Nimrods to operate up to 28.30°N if it was to proceed.

The American proposals brought the RAF and the Royal Navy closer together and helped to align the UK and theatre-based commanders. However, in London, the AFOPS staff – still smarting at their marginalisation - remained sceptical. On 18 December, they drafted an uncompromising minute to the Head of SEC (O)(C) declaring that ‘the case for extending the Nimrod operating area to 28°30’N has not yet been made’: only limited operational gains would be secured and the Nimrods would be extremely vulnerable until new self-defence capabilities were installed. Not until the 20th did they finally, grudgingly, accept that the ‘S of S should be invited to approve the request’ on condition that the Nimrods remained clear of Iraqi defences and Iranian territorial waters.

Ten days passed before the Secretary of State for Defence considered the proposed extension of the Nimrod operations area. On Christmas Day, the Nimrod Detachment received permission to operate up to 28.30°N for a search and rescue exercise on 3 and 4 January, but no general approval was granted until 1 January. Even then, it stipulated that ‘Operations north of 2800N are to be specifically authorised by BFCME,’ although he could delegate this authorisation if necessary.

There were strong arguments in favour of extending the Nimrod operations area further north, but the counter-arguments were also compelling, and they did not immediately disappear as 1990 made way for 1991. Experience soon demonstrated that, to be of value, Nimrod surveillance missions north of 28°N would have to be flown on a regular basis, and by 7 January Wight-Boycott was advocating a daily sortie to 28.30°N, provided that cover was available from American EP-3s (the electronic warfare version of the P-3 Orion) or AAW assets. He suggested that this new commitment could be sustained if the Nimrods flew fewer sorties in the Gulf of Oman.

This somewhat liberal interpretation of the MOD’s signal of authorisation was immediately challenged by the Air Commander, who still doubted that an extension of the operations area from 28°N to 28.30°N would produce a significantly increased surface surveillance return. On this basis, he ruled that ‘This will only proceed with my specific authority - which should be sought a day or so beforehand with

justification for flight up to 2830.’ He reiterated his position when, on 9 January, he was notified of the plan for the Nimrod detachment to provide direct support to the American Task Group 154.3 during Desert Storm – again requiring routine sorties to 28.30°N. ‘There must be no risk whatever to Nimrod,’ he wrote.

After seeking advice from the maritime air officers at Riyadh, and from 18 Group Headquarters, he approved the new plans in principle but questioned ‘the perceived need to operate up to 2830N when information there collected is only marginally better than that collected at 2800N’. He also stipulated that Nimrod missions north of 28°N should ‘always be in contact with dedicated EP-3 and CAP support’ and agreed to them on a case-by-case basis only. On 18 January, he finally gave general authorisation for sorties to 28.30°N, on condition that the Nimrods remained in two-way contact with AEW and CAP units.

As soon as the Nimrods commenced their new task, history repeated itself. The first sortie to fly in direct support of CTG 154.3 received what was described as ‘good service’ from American AEW aircraft, but was requested by a British naval vessel attached to the Task Group to fly to 29°N to make a visual identification of a radar contact. As the Nimrod had no authority to venture so far north, its crew declined. The UK Air Headquarters subsequently received ‘a very rude telephone call from duty RN Lt Cdr’, who proclaimed that the ‘Aircraft is not there to receive a service, he is to give a service’ and that ‘If crew not prepared to go to 29N and visually identify contacts they are no use and will not be tasked or required.’

How this officer could have been so completely ignorant of the Air Commander’s stipulations concerning Nimrod missions in the northern Persian Gulf remains a mystery. However, part of the problem lay in the fact that American P3s had been authorised to fly to 29.30°N provided that dedicated CAP cover was available; some naval units may have assumed that the same provision applied to the RAF’s Nimrods. It seemed likely that further problems of co-ordination would arise while British and American MPA flew to different latitudes. Therefore, after consulting Wing Commander Wight-Boycott, the UK Air Headquarters approved Nimrod sorties up to 29°N. The conditions previously laid down by the Air Commander continued to apply, and there were three further stipulations: Nimrods should only proceed north of 28.30°N with a dedicated CAP, time spent north of this latitude should be kept to a

minimum, and there should be positive control by an Air Control Unit throughout the excursion.

The final extension of the Nimrod operations area occurred for very similar reasons. Clearly, it was essential to co-ordinate operating restrictions for all MPA under the TACON of CTG 154.3, whether US P3s or British Nimrods. After the outbreak of hostilities and the rapid collapse of Iraq's air defences, the provision of CAPs in the most northerly regions of the Gulf enabled MPA to fly beyond 29°N, and the Americans decided in early February that their P3s should, in Wight-Boycott's words, 'go all the way up'. Following discussions between the Detachment Commander and AHQ, it was agreed that the Nimrod operations area could be similarly enlarged. The new area, approved by the Air Commander on 7 February, encompassed the entire 'Arabian Gulf north of 2830N' but stipulated that the Nimrods should remain clear of Iraqi and Kuwaiti territory and of Iranian territorial waters. The other conditions – AEW and CAP support, ACU control – continued to apply.

The Operations Area: Conclusion

The north-western boundary of the Nimrod operations area was the subject of continuous debate and intermittent controversy during Operation Granby. The boundary's extension occurred in an ad hoc fashion and was rarely the result of careful planning or co-ordinated action by the various commanders involved. The UK Air Commander and SNAME initially disagreed over the Nimrods' movement into the Persian Gulf; the second extension of the patrol area was precipitated by a short-term emergency surveillance operation; the third was restricted by caveats imposed by the Air Commander; the fourth produced friction within the command chain in theatre and in the UK before it was finally referred to the Secretary of State for Defence, and its subsequent approval was the subject of differing interpretations. Further arguments with the Royal Navy preceded the fifth extension at the end of January 1991. Only the proposition that the Nimrods should 'go all the way up' in February was unanimously accepted and systematically implemented as the logical culmination of earlier changes in their patrol area.

Although interventions by CBFME, JHQ and the MOD often complicated the issue, the debate on the Nimrod operations area was primarily staged along inter-service lines. The situation in the Gulf was novel, to say the least. The RAF's maritime air

reconnaissance force was naturally accustomed to working with the Royal Navy but not in an environment where there was a serious threat to the Nimrod. In these circumstances, the divergent concerns of two services were exposed all too clearly. Responsible for both the conduct of operations and the preservation of resources, the RAF refused to extend the operations area without carefully considering the risks involved. By contrast, naval support for extension was overwhelmingly based on the advantages that were expected to accrue in terms of surface surveillance. Yet the arguments were at their most polemical when conducted over distance via CIS. More traditional face-to-face consultations often identified scope for compromise.

8. Diplomatic Clearance

In normal peacetime conditions, the UK's maritime air reconnaissance effort in 1990 was largely focused on the North Sea and the North Atlantic – a very open operating environment. Where airspace was not neutral, it was largely controlled by NATO countries. Diplomatic clearance (abbreviated to 'dipclear') for Nimrod sorties, if required at all, was generally a matter of routine. Nimrods also flew peacetime sorties in theatres where diplomatic procedures had to be more carefully observed, such as the Mediterranean and the Gulf. In the latter theatre, occasional difficulties had been encountered with Iran. Nevertheless, provided that the necessary formalities were respected, clearance for overflight was usually granted without prevarication or undue delay.

During Operation Granby, dipclear became a more complicated issue. Operations had to be conducted in a theatre where a minority of states detached themselves completely from the impending conflict, assumed positions of scrupulous impartiality, and declared their resolute determination to maintain the integrity of their territorial waters and airspace. Dipclear problems with such countries were to be expected. What coalition commanders did not anticipate, reasonably enough, was that steadfast supporters of their cause would create similar difficulties. Elements within UAE political and military hierarchy apparently believed it was necessary to make periodic gestures to coalition forces to emphasise their country's sovereign status; these gestures sometimes involved rigid enforcement of established dipclear practice as well as marked departures from the normal procedures.

In this regard, the geography of the region dictated that it was the UAE rather than

Iran that presented the more serious hindrance to Nimrod operations. Iranian territorial waters certainly imposed their own constraints on the Nimrod operations area, but they were never infringed; only Iran's so-called 'Advisory Zone' (IAZ), which extended further into the Gulf, provided some potential for dispute. By contrast, lying directly between Seeb and the Persian Gulf, the UAE was in a position to disrupt Nimrod missions regularly if it chose to do so. Without dipclear to transit through UAE airspace, Nimrod Persian Gulf missions would have to fly via the Straits of Hormuz, taking longer and consuming more fuel. Moreover, UAE restrictions on Nimrod flying in the Persian Gulf itself could prevent surface surveillance along important areas of the Kuwaiti coast.

Yet if dipclear problems were foreseen at all, the principal concern was Iran rather than the UAE. While Iranian relations with Iraq might have been less than cordial in the aftermath of the Iran-Iraq war, there were no direct diplomatic relations between the UK and Iran in August 1990. Moreover, Iran had intermittently protested about alleged violations of its airspace by Nimrods involved in Operation Magic Roundabout, and an aura of uncertainty surrounded the status of its Advisory Zone.

From the very outset of Granby, the MOD was determined to ensure that there was no threat to sorties inside the IAZ, and no RAF aircraft were permitted to enter it during the first days of the operation. It was clear, however, that exclusion from the IAZ would impose serious constraints on the Nimrods' surveillance capability, and permission to operate inside it was therefore sought through the medium of the Iranian mission to the UN in New York. This was duly received, allowing the MOD to grant authorisation for the Nimrods to fly within the IAZ from 25 August. As a precaution, they were to observe a buffer zone of three NM outside Iranian territorial waters.

This ruling removed a significant constraint on coalition maritime air reconnaissance. Cleared to fly inside the IAZ, the Nimrods could establish a far more comprehensive picture of shipping movements in the Persian Gulf than would otherwise have been available. Nevertheless, as surface surveillance activities developed and the Nimrods' operations area grew, the UK Air Headquarters became concerned that the buffer zone was restricting their ability to monitor suspect merchant vessels close to Iran.

JHQ subsequently approached the MOD seeking permission 'to enable Nimrods to fly up to the 12 NM limit [Iranian territorial waters] when specifically tasked to locate a surface vessel of interest assessed from other intelligence sources to be transiting inside Iranian territorial limits'. However, after consultations between SEC (O)(C) and the Foreign Office, the request was declined. Unconvinced by the operational arguments, they also felt that the benefits of flying inside the buffer zone would be outweighed by the increased risks. Thus, diplomatic problems with Iran were expected, and policy was shaped by the need to keep friction to an absolute minimum. As one MOD signal put it: 'Everyone is very sensitive to possible violations/protests from Iran.'

By contrast, dipclear problems with the UAE apparently came as a complete surprise. The first threat of UAE obstruction, involving the practice interception of a Nimrod by two Mirage fighters on 20 August, has already been described. Then, on 1 September, a Nimrod flying in the north of the Gulf of Oman was challenged by UAE Air Traffic Control (ATC) and told to remain no less than 25 NM clear of the UAE coastline. The crew managed to negotiate a reduction to 15 NM, but the episode naturally caused concern. 'This is a new development,' the Seeb detachment reported. 'Have never had problems in past, indeed usually allowed to operate within 6 NM.' The British Military Attaché in the UAE had been contacted but could offer no explanation for the 25 NM limit.

The UAE action had serious tactical implications. If the 25 NM restriction was maintained, it would be difficult for the Nimrods to monitor shipping movements around the Fujairah tanker park, located off the eastern UAE coast, where no fewer than seven Kuwaiti tankers were identified on 23 August. The MOD described the limit as 'an unacceptable constraint on the Nimrod operations in the GOO ... The UAE have no legal right to prevent any nations' ac from operating in international airspace outside of notified controlled airspace.' The British Military Attaché at Abu Dhabi was instructed to raise the matter with the UAE authorities immediately. Nevertheless, further problems were encountered on 2 and 6 September.

The start of Nimrod Persian Gulf sorties on 8 September brought renewed friction. To reach the Persian Gulf from Seeb, the Nimrod detachment naturally sought permission to transit through UAE airspace. They obtained dipclear, the flight plan

was filed, and the UAE authorities approved penetration of their Flight Information Region (FIR). However, the 'civil controller Dubai turned Nimrod back to Muscat on instructions of military officer standing beside him.' An impasse of 20 minutes followed, after which the Nimrod secured permission to proceed to the Persian Gulf through the UAE FIR at low level via the Straits of Hormuz.

On the following day, RAF representatives met the UAE authorities and agreed a change of procedure. On 10 September the Nimrod detachment was told to file flight plans and request dipclear at least 24 hours in advance of take-off. This arrangement was not welcomed by the Nimrod Detachment Commander, who pointed out that 'Tasking for MPA tanker ops in Gulf does not give sufficient leeway to permit 24-hour notice of dip clr to UAE.' It was equally unwelcome to the Nimrod crew who, that same day, obtained all necessary transit clearances under the old procedures only to see them withdrawn. On their return from the Persian Gulf, they were again compelled to transit at low level through the Straits of Hormuz after entry to UAE airspace had been refused.

Nevertheless, the new arrangements represented a definite improvement in certain important respects. They removed altogether any need for the Detachment Commander to obtain formal dipclear through the British Embassy and the Ministry of Foreign Affairs in the UAE. Furthermore, although the normal warning time was indeed 24 hours, there was provision for 'crisis' warnings, covering all short-notice in-theatre operational flights, which required only three hours notice, and 'VIP' warnings, requiring only one hour. There was also agreement on the adoption of an aircraft movement notification system requiring RAF detachments to fax their flight details to the UAE Joint Operations Centre at Abu Dhabi.

This system was first tested on 13 September, when it failed. The UAE radar operators initially granted overflight clearance, but it was then rescinded by the military authorities, and the aircraft was forced to withdraw. According to the British Defence Attaché in Abu Dhabi, the problem lay in the division of authority within the UAE government between the Ministry of Foreign Affairs and the armed forces. On 15 September, the Persian Gulf sortie was again refused permission to transit through UAE airspace, and the Defence Attaché advised Wing Commander Neal the following day that the aircraft movement notification system had been suspended:

‘need to revert to full dipclear requests.’

On 18 September, JHQ launched a new initiative. At the request of the Defence Attaché in Abu Dhabi, an ATC-qualified RAF liaison officer was sent out to the UAE. However, before his arrival on 21 September, the Nimrods became embroiled in the so-called Hittin group incident, in which contact with three Iraqi tankers was temporarily lost. On 20 September, Wing Commander Neal recorded that ‘Sortie planning [was] severely hampered by inability to arrange UAE dipclr at short notice.’

Flash signal sent but none of three planned sorties got dipclear, 24 hrs notice required. Reactive tasking impossible to achieve under these circumstances. Could have saved one sortie by tanking but tankers inhibited because of dipclear.

Then, in a further development on the 24th, a UAE representative requested access to the Nimrods’ post-sortie reports and proposed that a UAE serviceman should fly in all Nimrods transiting through his country’s airspace. A challenging task therefore confronted the new RAF liaison officer when he reached the Gulf. He had not only to negotiate a new dipclear system that would allow reactive tasking; he had also to ascertain whether the UAE authorities were attaching conditions to their co-operation.

Fortunately, it transpired that they were not; in fact, the new proposals were apparently tabled during entirely separate discussions. With this established, the dipclear negotiations could proceed, and the UAE quickly agreed to renewed trials of the fax-based aircraft movement notification system. The system was soon working well for routine Nimrod sorties, and when, on 13 October, the Persian Gulf sortie was again refused clearance to enter UAE airspace, the incident was dismissed by the British Defence Attaché in Abu Dhabi as a ‘one-off’. For urgent operational needs, the fax-based approach was replaced by a simple telephone call from the RAF detachment concerned to the RAF liaison officer in the UAE, stating call signs, route, and entry and exit points and times. Three hours notice was normally required, but this could be reduced to as little as twenty minutes in an emergency. On 26 November, the RAF liaison officer signalled that ‘UAE authorities appear to have gained confidence in system and a rapport exists.’ Yet he also acknowledged the importance of introducing ‘the human element’ into the dipclear process rather than

depending entirely on CIS. 'The bottom line', he wrote, 'is [that] if I don't know then they won't know and they will turn you away.'

There were no more dipclear problems for Nimrods transiting through UAE airspace, but they were still forbidden to undertake surveillance duties over UAE territorial waters and were consequently unable to provide a complete picture of the dispositions of merchant shipping. The beginning of December witnessed further discussions with the UAE authorities in an attempt to secure permission for Nimrods to operate up to a line three nautical miles from the coast. Aircraft would comply with all necessary ATC requirements, and would avoid all restricted, prohibited and danger areas. Flights would be co-ordinated with UAE Air Force and Air Defence Force activities.

The documents do not record any response, but the Persian Gulf sortie was prevented from operating within 12 NM of the UAE coast on 8, 9 and 10 December, and the matter was never satisfactorily resolved. The sortie was cleared to fly to the nearer limit on 22 December, but the 12 NM restriction was applied once again on the 30th. Behind-the-scenes personal differences or jurisdictional disputes in the UAE probably lay behind these arbitrary changes in policy; diplomatic pressure from the UK could only provide part of the solution. Fortunately for the Nimrods, this aspect of the dipclear problem related specifically to their MIF role, and there were no further difficulties with the UAE after they began flying in direct support of CTG 154.3 on 16 January.

Diplomatic Clearance: Conclusion

The Seeb Nimrod detachment was by no means the only coalition force element to experience dipclear problems with the UAE during Operation Granby, but the Nimrods' flying pattern left them particularly vulnerable to UAE overflight restrictions. In the enclosed airspace of the Gulf, it might reasonably have been expected that neutral states would enforce dipclear requirements, but the UAE was an ally, and Nimrods deployed to the Gulf for Operation Magic Roundabout in the 1980s had not experienced comparable difficulties. There were no grounds for predicting that overflight limitations might be employed to make political statements. Given that UAE overflight problems were completely unexpected and that they were to an extent politically motivated, it is hardly surprising that early attempts to revise dipclear

procedures proved ineffective. The introduction of the human element – in this case, an appropriately experienced RAF liaison officer – helped to resolve the impasse, but Nimrod sorties continued to encounter intermittent obstruction until the beginning of Direct Support operations in January 1991.

9. The Nimrod Enhancement Programme

The Nimrod MR2 was equipped with an extensive range of enhancements during Operation Granby to raise its self-defence, communication, surveillance and navigation capabilities. A self-defence suite was required to counter the threat of hostile action and blue-on-blue engagements; improved secure communications, including a data-link system, were necessary, as was an infra-red optical system for stand-off identification of surface contacts. Finally, the Nimrod's navigation systems had to be improved to compensate for INS drift, inaccurate Omega, the absence of a suitable Loran chain, and the featureless Gulf coastline, which was unsuitable for radar fixing. The need to incorporate so many modifications within such a short period primarily reflected the many fundamental differences between the operating environment of the Atlantic and that of the Gulf. Although, by 1990, some of the Nimrod's equipment urgently required modernisation, the aircraft was, for the most part, adequately prepared for deployment in its normal theatre. By contrast, operations in the Gulf imposed many new demands and found the Nimrod wanting in certain important respects.

Yet the operational environment was not all that changed. After British forces were committed to the coalition, financial restrictions on procurement were relaxed to enable the purchase of essential equipment in the form of Urgent Operational Requirements (UORs). The additional funds were provided because military requirements had suddenly acquired a political importance that they lacked in peacetime. Barely a month after the beginning of the operation, the Secretary of State for Defence asked for arrangements to be made to allow 'Ministers to monitor the availability and performance of equipment deployed in the Gulf area'. Operation Granby had rapidly demonstrated the intimate relationship between equipment capability and policy decisions, and the press had been showing a close interest.

Several enhancements were installed into the Nimrod in theatre, including Mk 12 IFF (Mode 4), frequency-agile Havequick radios, and a portable infra-red thermal

imaging detection system. In the longer term, a 57-band VHF/FM marine band radio was procured to replace the existing 10-channel VHF radio, colour Searchwater was introduced, and navigation fixing problems encountered during the early stages of Operation Granby were solved by the installation of Navstar GPS. Link 11, providing on-screen location, identification and other details of aircraft and ships, improved co-ordination between the Nimrods and other similarly equipped elements among the coalition forces. The rationale for procuring Link 11 was described as follows:

In the NATO area, Nimrod operations would primarily be ASW in areas of low surface-contact density when it is possible to conduct rudimentary co-ordinated operations without Link 11. In the southern Gulf, surface-contact density of civilian and military . . . shipping is extremely high, and the relative movement of these ships means that only with all units working on a common Link net can effective surveillance be maintained.

This equipment certainly improved the Nimrod's operational capability. GPS provided an extremely accurate radar plot stabilisation and was described by the Seeb detachment as 'invaluable'; it subsequently became standard equipment for the Nimrod fleet. Link 11 was 'exceptional'; together with Mk 12 IFF (Mode 4) and secure UHF, it eased considerably the task of integrating the Nimrods into the multi-national coalition force. It is nevertheless a fact that GPS, Link 11, and several other systems procured specifically for Granby, only entered service during the last two months of the operation; most Nimrod sorties were flown without them. Moreover, GPS initially suffered from poor serviceability.

Of all the new systems procured for the Nimrod MR2 during Operation Granby, none received higher priority than the new self-defence suite. During Operation Corporate, the Nimrod had been equipped with a rudimentary self-defence capability consisting of the AN/ALE 2 chaff dispenser and the AN/ALE 40 flare dispenser. However, engineering and trials follow-on work was required on both the chaff and flare systems after the operation, and it did not progress very quickly. There was, of course, little need for such capabilities in the Atlantic theatre, where the Nimrod's own sensors and the relative freedom of open ocean operations afforded it a reasonable degree of protection.

Operation Granby placed the Nimrods in a very much more hostile environment and immediately exposed the inadequacy of their self-defence systems. Thus, although MPA were well protected by the coalition air 'umbrella' from the outset, their vulnerability raised serious concerns among senior officers and aircrew. By the beginning of September, an advanced new self-defence suite had been ordered for the Granby Nimrods. Developed and tested with remarkable speed during the following months, the suite entered service in January 1991. Its story contains many themes familiar to the military historian. In peacetime, inevitably perhaps, operational requirements are neglected; after the outbreak of war, lost ground has to be recovered quickly. Yet even in conditions of wartime urgency, there are limits to the extent to which the procurement process can be accelerated, and there may also be insufficient time to train personnel to use new equipment effectively or safely.

At the beginning of Operation Granby, there were no illusions about the Nimrod's vulnerability. Contemporary assessments tended to play down the threat posed by Iraqi land-based SAMs or interceptor fighters, but hand-held SAMs launched from ships or oil terminals appeared far more dangerous. However, the greatest threat came not from the Iraqis but from other coalition units. As the MOD's Directorate of Operational Requirements (DOR) put it, even in open ocean operations directed by integrated command structures, there was always a risk of so-called 'blue-on-blue' attacks on the Nimrod.

In the more compressed area of operations bounded by the Gulf States this risk is increased. Moreover, the multiplicity of national forces operating in the Gulf area, not under integrated command and control, further increases the risk. In addition, the unpredictability of Nimrod operations, when the aircraft is frequently dropping in and out of radar cover, makes its location frequently in doubt ... This further adds to the risk of an inadvertent intercept against the Nimrod.

The Nimrod's self-defence systems offered minimal protection against such an eventuality. In a signal to JHQ on 10 August, 18 Group Headquarters pointed out that the AN/ALE 2 chaff dispenser was 'of limited effectiveness' and urged that 'modification of equipment and associated trials be progressed urgently'. The chaff dispenser had in fact been designed to enable Vulcan bombers to lay chaff corridors

and was never intended for self-defence; the chaff bloomed too slowly to deceive modern radar-guided missiles, and whereas the Vulcan had been fitted with four of these dispensers, the Nimrod was equipped with just one.

Apart from their doubtful operational value, the AN/ALE 2 dispensers were in any case worn out by 1990, and frequently jammed. On 28 August the Nimrod detachment informed Kinloss:

Chaff still u/s on all a/c ... There is evidently a problem with the equipment in the airframe environment which prevents it generating. This equipment is a vital part of the Nimrod self-defence system but crews are becoming increasingly disenchanted with its constant malfunction.

By 29 August, investigations into new chaff and flare systems were already in progress, and a modified ALE 2 installation was tested by the Central Trials and Tactics Organisation (CTTO) at Boscombe Down during the first week of September. However, on the 10th, the CTTO reported that 'ALE 2 is not, repeat not, suitable for protection of the Nimrod against modern threat radars in Granby.' Further efforts to improve the system were no more successful. The Seeb detachment was meanwhile instructed to replace each dispenser after it had been used three times and to change the chaff after every sortie, whether it had been used or not, to counter the moisture ingestion from which some of the problems originated. From 19 November, every Nimrod arriving in Seeb from the UK carried a reserve dispenser, and every returning aircraft brought back unserviceable ones. By January 1991, the detachment had accumulated a mountain of unserviceable chaff.

The vulnerability of the Nimrod and the ineffectiveness of its chaff dispensers soon persuaded the MOD to procure entirely new self-defence capabilities. As early as 3 September, BAe and Marconi were examining the potential for installing the Tornado's BOZ pod chaff dispenser into the Nimrod together with a new device, the towed radar decoy (TRD). By the 10th, the MOD was considering the development of an integrated Nimrod self-defence suite comprising a modified AN/ALE 40 flare dispenser, the BOZ pod, a Marconi TRD and a Loral AN/AAR Missile Approach Warner (MAW). The underlying principle was simple enough. Even with the absolute minimum of notice, the MAW would warn of approaching missiles and automatically

activate the flare, chaff and TRD systems. But could a reliable suite be developed in time for Granby? There seemed no reason to doubt that tried and tested equipment, such as the MAW and the BOZ pod, would enter service within a few months, but the TRD was still at a very early stage of development.

On 21 September, DOR (Air) convened the first of a series of meetings to review the progress of the Nimrod enhancements, and it was agreed that the timescales involved in the introduction of the new equipment should be shortened. 'The driving factor was the earliest possible fitting of the BOZ pod. This would give the Nimrod MR some self-defence capability as soon as possible.' By the second week of October, all UORs covering the new self-defence equipment had been approved, and a contract for the TRD was being issued; design work on the BOZ pod was continuing at BAe, but unforeseen manufacturing problems had arisen. Trials were planned for early November. On 12 October, the modified ALE 40 flare dispenser was successfully tested in flight, and a report on the 22nd suggested that the other three elements of the self-defence suite might reach the Gulf in January.

While the self-defence suite was being developed in the UK, at Seeb the Nimrod crews were seeking alternative forms of protection. During Operation Corporate, the Nimrod had been equipped with Sidewinder missiles after the sighting of an Argentine Boeing 707 reconnaissance aircraft. Although, at the beginning of Granby, the RAF decided that the Seeb Nimrods should be unarmed, the failure of the ALE 2 chaff dispenser soon placed the Sidewinder option back on the agenda.

Early in September, and again in the middle of October, the possibility of installing Sidewinder was raised at Riyadh and Seeb. Proponents of the idea argued that the mere presence of Sidewinder would exert a deterrent effect on hostile aircraft and bolster the crews' morale. Yet the maritime air staff at the MOD pointed out that the Sidewinder mounting points were required for other equipment, including elements of the self-defence suite, and that, when launched from larger aircraft like the Nimrod, the missile would provide only the most limited combat capability.

The next proposals for reducing the Nimrods' vulnerability were tabled in theatre in November. Since their assignment to the MIF, the Nimrod crews had been instructed to observe a minimum operating altitude of 200 feet. However, on the 22nd, the air staff at HQBFME suggested a minimum of just 100 feet on self-defence grounds.

They argued that ‘the best evasion method against a missile threat is to go as low as poss[ible] in the hope that any missile will hit the sea during the final part of its approach’ and that ‘the types of radar used by the Iraqis would find a target at 100ft very difficult to lock up.’ Several UK authorities promptly challenged the scientific basis of this contention, pointing out that there was no significant difference in the performance of Iraqi missiles between 100 and 200 feet, that the new self-defence suite would be more effective at the higher altitude, and that the best defence would be achieved by combining the new suite with hard manoeuvres at 200 to 300 feet. The existing minimum of 200 feet therefore remained in force.

Meanwhile, the fourth committee meeting on Operation Granby Nimrod modifications on 10 November raised concerns over the progress of the TRD. A few days later, Trial Humbert, which tested the MAW and the BOZ pod, was scheduled for the end of November, but the JHQ maritime air staff were forced to accept that the TRD would not be ready for trials until the following month. During Trial Humbert, the MAW proved its capability in typical short-range missile engagements but also manifested a high false alarm rate against UV sources; its installation into the Granby Nimrods was therefore only recommended subject to certain operating restrictions and modifications. The BOZ pod chaff and flare dispenser functioned effectively and was cleared for service.

By 6 December, the Granby Nimrod modifications committee was anticipating that the first fully enhanced Nimrod, XV255, would be ready to deploy to Seeb by 17 January. Yet this optimistic assumption clearly depended on the acceleration of the TRD programme, and the MOD subsequently intensified pressure on Marconi and BAe to complete the system’s development and installation. Ultimately, it was released for trials in mid-December, and a report prepared on the 18th confirmed that although ‘only [a] very limited amount of data [had been] obtained’, it was ‘sufficient to be confident that decoy performs as expected’. On this basis, installation was formally recommended. An addendum to UOR(A)23/90, covering the TRD, triumphantly proclaimed that MOD pressure had helped to compress production timescales by one month and that the first two TRD systems might be in theatre by the end of February.

On 9 January 1991, the chairman of the Nimrod modifications committee thanked its

members for working through Christmas to ensure the programme remained on track and confirmed that the self-defence suite would shortly be ready for service. XV255 was cleared for deployment by 17 January and arrived at Seeb on the 21st. The engineering effort involved in this achievement was indeed remarkable. In just five months, the Nimrod had been re-equipped with a range of modern self-defence applications vastly superior to the antiquated and ineffective chaff dispensers available at the beginning of Operation Granby. In February, the Seeb detachment reported favourably of the MAW/BOZ pod combination.

Nevertheless, the fact remains that for five out of little more than six months of operations in the Gulf, the Seeb Nimrods executed their tasking in a hazardous and potentially hostile environment without an effective self-defence capability. Moreover, when it finally appeared, the self-defence suite was by no means an unqualified success. The story of the TRD should serve as a salutary warning of the extreme dangers involved in rushing high-technology equipment into service.

The TRD was by far the most expensive part of the Nimrod self-defence suite: in December 1990, the total project cost was estimated at £5.5 million for five systems and spares, including the prototype. The RAF originally hoped to obtain a total of eight systems, five for the Nimrod MR2s and three for the Nimrod R1s. However, as a number of these would not have been delivered until April or May 1991, the additional requisitions were refused. The first three production TRDs were allocated to the Nimrod R1, so the Seeb detachment had to make do with the prototype, which was fitted to XV255, until the fourth production TRD was delivered in May. By then, of course, the detachment had long since returned to the UK.

XV255's TRD had a short and unhappy service history. During an early trial, it was misidentified as a hostile aircraft by the Nimrod crew, who went so far as to contact a nearby ship before realising their mistake, but worse was to follow. During a night sortie on 29 January, the TRD was lost altogether in circumstances that were never adequately explained. After the decoy cable suddenly slackened, the crew decided to jettison the system on safety grounds, but it is probable that the decoy had already broken away from its cable and fallen into the sea. Unfortunately, as a condition of free loan from Marconi, the MOD had accepted liability for loss or damage of the trial TRD and had not insured itself against this liability. A replacement cost of £97,000

was subsequently negotiated; by this time, total financial provision for the TRD had risen to £6.6 million.

The final démarche came in September 1991. Following the loss of another TRD during trials, a memorandum from Strike Command to the MOD surveyed the system's record:

This is the most recent of a series of incidents/problems . . . The unexplained loss of the decoy on XV255 during Gulf operations, winch unit corrosion problems on the R Mk 1, inadvertent deployment of the decoy on XV230 during delivery to A&AEE for MR2 CA release trials and now the loss of the decoy on XW666 . . . In view of the number of unexplained incidents and outstanding actions on MOD(PE) . . . [I] am presently unable to recommend that the TRD equipment be installed on either the R Mk1 or MR2.

10. The Nimrod Enhancement Programme: Conclusion

The range of enhancements applied to the Nimrod MR2 during Granby produced considerable benefits in subsequent years but their impact during the operation was limited. Although some new equipment, notably Havequick radio and GPS, entered service during the final stages of the trade embargo, fully modified aircraft only arrived after the onset of Direct Support operations, and some of the new systems proved defective. There is nothing particularly surprising in this story; indeed, history suggests that it would have been more remarkable if the entire inventory of new equipment had entered service earlier and without any technical problems. At most, the Nimrod enhancement programme provides another illustration (if one is needed) of the importance of long-term planning in military procurement: conceptual, development and production timescales are invariably too drawn out to be responsive to short-term operational requirements, and attempts to accelerate procurement by cutting corners or pressing contractors may only increase costs and reduce the utility of the end product. They will rarely produce dividends in time to affect the outcome of a war of brief duration.

General Conclusion

Throughout Operation Granby, the RAF's Nimrod MR2 detachment was confronted by a series of unforeseen and unfamiliar challenges. These stemmed less from the basic tasking to which the Nimrods were assigned than from the operating environment. The Nimrod force was well prepared for surface surveillance, SAR and DS duties, but not as part of a complex coalition operation conducted far out of area, over enclosed seas bordered by enemy and neutral states.

The MIF task was particularly difficult due to the absence of planning and preparation and the peculiarities of the Gulf theatre. Virtually every aspect of the Nimrod MR2 mission had to be determined in an ad hoc fashion at the tactical level, and there were inevitably some teething troubles during the first two months of the embargo. Happily, by October, these had largely been overcome, and their impact was limited, in any case. Iraqi ocean-bound trade was very soon brought to a complete standstill. If the DS task proved more straightforward, this was chiefly because, by January 1991, the Nimrods were far more familiar with the distinctive demands of Gulf operations.

The difference between the Nimrod MR2's mission in the NATO area during the 1980s and its tasking during Operation Granby is also reflected in the sphere of command and control, in the deliberations that surrounded the expansion of the Nimrod operations area, and in the challenges associated with diplomatic clearance for overflight of nearby Gulf states. Normal peacetime command arrangements could not cater for the Gulf crisis, but they were initially replaced by dual structures that left both JHQ and CINCFLEET in command of deployed force elements and the Nimrod detachment poised uncomfortably between them. Protracted arguments were required at the highest levels to resolve this situation and unify all UK forces in theatre under a single Joint Commander.

Where the operations area was concerned, although RAF maritime air reconnaissance squadrons regularly worked closely with the Royal Navy, they were mainly accustomed to collaboration in relatively benign operational environments free from hostile air threats or any significant risk of fratricide or mid-air collision. The Gulf was a very different proposition, and every naval request to expand the Nimrod

operations area had therefore to be considered carefully and in the context of a trade-off between risks and benefits. This unfamiliar scenario generated a degree of inter-service friction that persisted for much of Granby and was further complicated by conflicting views at different levels of the command chain and the suspension of normal C2 channels between the RAF and the Navy.

As for the the dipclear issue, this, again, had rarely impacted on RAF maritime air reconnaissance activity in the NATO area. Only the precise circumstances of Operation Granby demonstrated that overflight restrictions could impose significant operational constraints and suggested that dipclear would require far more careful consideration if RAF detachments were to deploy out of area in future.

The demands of the Gulf conflict revealed that the Nimrod's peacetime capability fell far short of operational requirements. Recognised weaknesses in such fundamental areas as navigation, communications and self-defence were exposed all too clearly and had to be addressed at breakneck speed through UOR procedures. Yet the adverse effects of a decade of underinvestment proved very difficult to remedy in a matter of months. The Nimrod was undoubtedly improved: colour Searchwater, GPS, Havequick and Link 11 were welcome enhancements, and it would have been difficult, if not impossible, for the Seeb detachment to be effectively integrated into the coalition – substantially American – maritime order of battle without them. But the provision of effective self-defence equipment at very short notice proved far more difficult. The lesson could hardly have been clearer: if large and vulnerable aircraft were to be placed in harm's way, continuous investment in defensive and protective capabilities was essential.

Ultimately, though, it was inevitable that Granby should have confronted the RAF's Nimrod force with a multiplicity of challenges that could only be addressed as and when they were encountered. To that extent, the key to mission success lay not in rigid planning for specific eventualities but in flexibility, adaptability and resourcefulness. And it is in the light of this fundamental truth that the achievements of the Seeb Nimrod detachment appear all the more impressive. Their headline operational statistics speak for themselves. Throughout Granby, the three deployed aircraft maintained a flying rate of around 60 sorties per month. During the MIF phase, they challenged no fewer than 6,325 ships; in the DS period, they mounted

85 sorties and participated in actions against 15 Iraqi vessels. After operations ceased, the CTG 154.3, US Navy Admiral R.J. Zlatoper offered the following assessment:

Your entire organisation's performance was exemplary and contributed directly to the destruction of the Iraqi Navy. Your aircrews' expertise and professionalism in employing the Nimrod to detect and track hostile surface contacts resulted in numerous engagements of Iraqi vessels. The high tempo of operations maintained by Nimdet Seeb would not have been possible without an outstanding maintenance effort. Your extraordinary performance during Operation Desert Storm was a reflection of total team effort by all Nimdet personnel.