Operation GRANBY: Maritime Air Reconnaissance[1]

By Dr Sebastian Ritchie

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Abstract: This article takes an in-depth look at one of the lesser known stories of the War, the contribution of the RAF's Nimrod MR2s between August 1990 and April 1991. 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. Complex coalition operations conducted far out of area, over enclosed seas bordered by both enemy and neutral states. In this context the Nimrod MR2 force's achievement was impressive: 3 deployed aircraft achieved 60 sorties/month, challenged 6,325 ships, 85 Direct Support sorties were flown, and they participated in actions against 15 Iraqi vessels. This article analysis how that was achieved and identifies the key lessons learnt in the process.

Introduction

This study surveys the history of Royal Air Force maritime air reconnaissance during Operation GRANBY. The first section provides a narrative on Nimrod MR2 operations in the Gulf between August 1990 and April 1991. For the bulk of this period, a detachment of three Nimrods based at Seeb, in Oman, was engaged in surface surveillance work with the coalition Maritime Interception Force (MIF); at the beginning of October, the detachment was also incorporated into the USCENTCOM Search and Rescue (SAR) organisation. Then, in January 1991, it was transferred from the MIF to Anti-Surface Unit Warfare (ASUW) operations in direct support (DS) of coalition naval units. Each of these three, very different roles is considered here in turn.

The second section employs a more thematic approach. The surface surveillance, SAR and DS roles were all familiar to the Nimrod squadrons in peacetime, but the Seeb detachment faced a range of testing challenges in executing these tasks in a multi-national coalition environment, far beyond the Nimrod's normal operating area and in close proximity to enemy forces. The aircraft itself required extensive modernisation to enhance its surveillance capability and its navigation, communications and self-defence systems. It was necessary to establish new command and control structures designed specifically for Operation GRANBY, and the Nimrods had to fly in confined and crowded airspace, where there was a significant threat of hostile activity, 'blue-on-blue' engagement and mid-air collision. The detachment's patrol area had to be determined so as to maximise operational gain in this situation, while minimising operational risk. Furthermore, overflight restrictions imposed by the surrounding Gulf states had to be carefully observed.

These four subjects – the Nimrod enhancement programme, command and control, the operations area, and overflight restrictions – are each considered in turn to establish what the key problems were, how they were addressed and how successfully they were overcome.

Historical Background

The Nimrod maritime patrol aircraft (MPA) entered service with the RAF in 1969, and became the workhorse of the UK's maritime air reconnaissance effort. During the 1970s, it served in the anti-submarine and surface vessel surveillance roles and undertook SAR duties in the North Atlantic and the North Sea. At the end of the decade, the MR2 upgrade incorporated a variety of improved communication, navigation, hunting and detection systems, including the Searchwater surface surveillance radar; in 1982, a detachment of Nimrod MR2s was committed to Operation CORPORATE, the Falklands conflict, flying from Ascension Island.

By the mid-1980s, the UK's maritime air reconnaissance force consisted of four squadrons of Nimrod MR2s located at RAF Kinloss and RAF St Mawgan. They came under the command of the AOC 18 Group, based alongside CINCFLEET at Northwood. They were predominantly engaged in the surveillance of Soviet naval vessels, although they also undertook deployments to a variety of overseas theatres, including the Persian Gulf. Under the auspices of Operation

MAGIC ROUNDABOUT, Nimrods based at Seeb periodically flew surface surveillance sorties in the Gulf, supporting the Omani armed forces. This experience would prove very valuable during Operation GRANBY.

Following Iraq's invasion of Kuwait on 2 August 1990, UNSCR 660 called for her troops to be withdrawn 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 would produce a rapid solution to the crisis, for Iraq was (and is) heavily dependent on imported food paid for by oil exports. A cessation of foreign trade would confront Saddam Hussein with the certainty of economic collapse and might therefore persuade him to end the occupation.

The imposition of effective economic sanctions 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 one day and broken the next. Continuous monitoring must be maintained until the ultimate 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 support from air reconnaissance units possessing advanced surface surveillance capabilities. This was a task for which the RAF's Nimrod MR2s were admirably suited.

Maritime Interception Force Operations

The decision to contribute a detachment of Nimrod MR2s to the MIF in the Gulf was approved by the Secretary of State for Defence on 8 August 1990. They were to assist naval units with the task of interception by identifying and reporting all shipping transiting through the area of operations. Four aircraft were to be made ready. Each was to be AAR capable and fitted with Yellowgate electronic support measures, colour Searchwater and STF 154, a secure communications package previously employed during Operation MAGIC ROUNDABOUT. Self-defence was to be provided by chaff and flare dispensing systems. Deployed aircraft were also to be fitted with ASR equipment.

It was not immediately clear where the Nimrod detachment would be stationed. Although the Nimrod crews had considerable experience in operating from Seeb, the island base of Masirah was viewed as a better option. US Navy P-3 MPA were already operating from Masirah, and it was felt that Anglo-American forces might collaborate more effectively if the Nimrods were positioned there as well. Such taxing issues as command, control and communications, rules of engagement (ROE), areas of operation and combat identification could be more easily addressed.

Nevertheless, Seeb was ultimately selected for the detachment, partly because the Nimrod squadrons were already familiar with the base, partly because Seeb is located further north than Masirah in the Gulf of Oman. Based at Masirah, the Nimrods would have wasted flying

hours and fuel in transit to the Gulf; based at Seeb, they could be deployed in the theatre of operations without delay.

The Nimrods 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 to assist the Royal Navy and other coalition naval forces. On 10 August, 18 Group summarised the task as follows:

> Primary mission for Nimrods will be surveillance of all shipping entering/leaving Persian Gulf … through straits of Hormuz … 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.

Preliminary command and control arrangements were confirmed the same day. The Joint Commander of British forces in the Gulf (the AOC-in-C Strike Command) assumed operational command of the Nimrod detachment, while operational control was vested in the Air Commander British Forces Arabian Peninsular. Tactical command of the Nimrod detachment was exercised by the Detachment Commander, who reported to the Air Commander, but it was accepted that tactical control (TACON) might be delegated to the Royal Navy Task Group already deployed in the Gulf, Task Group 321.1 (under the Commander Task Group (CTG) 321.1), the Senior Naval Officer Middle East.

At this stage, the primary objective was to deploy the Nimrods to Seeb, establish the necessary base infrastructure and develop tasking procedures in consultation with other MPA and coalition naval units. The Detachment Commander, Wing Commander Andrew Neal (the Officer Commanding 120 Squadron) was responsible for each of these tasks. Arriving in theatre on 13 August, he had initially to establish contact with other maritime authorities in the region to develop a modus operandi. He met CTG 321.1 on board HMS York at Bahrain the following day, and then turned his attention to the US Navy and particularly the principal American warship in the Gulf, the aircraft carrier USS Independence. At a meeting with American naval officers, it was agreed that the Nimrod detachment would launch their first surface search and area familiarisation sortie on the 15th. During the flight, the Nimrod was challenged by Independence, and the ensuing three-way conversations on secure radio between the Nimrod Captain, the Detachment Commander and the carrier battle staff finalised the Nimrods' future operating procedures. On 16 August, the detachment flew two surface surveillance sorties in the Gulf of Oman. So commenced an operational routine that would continue until January 1991. 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.

At first, the two daily Gulf of Oman sorties were of six and a half hours each between 0500 and 1900, west of 60° East, as far north as the Straits of Hormuz, while American P-3s covered the Gulf east of 60° East and south of 22.30° North between 1900 and 0500. Crews were tasked 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 200 feet 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 like the Joint Ocean Surveillance 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 sources.

Two aspects of these arrangements are particularly noteworthy. First, there were no plans whatsoever for the Nimrods to conduct this type of operation in the Gulf; a detailed Concept of Operations (CONOPS) for the Nimrods was only drafted in October, and a final version did not appear until November. This explains why every detail of their role was initially determined by the Detachment Commander. He fulfilled his task with the absolute minimum of higher direction, developing with coalition naval officers the tactical command and control arrangements and operating procedures that allowed the Nimrods to be effectively integrated into the MIF. Second, inevitably perhaps, as nothing was written down, the various parties involved – the Nimrod detachment, the Royal Navy and, to an extent, the US Navy – did not all emerge with identical perceptions of what had, in fact, been agreed.

By the end of their first week in theatre, the Nimrod detachment numbered 100 personnel, an establishment that increased over six weeks to 178. To fly two sorties per day, three aircraft were normally maintained in theatre. To maintain serviceability, each was replaced after six weeks via a 'rolling' changeover every two weeks, which was also used to replace one of the deployed aircrews and some groundcrew. Crews remained in theatre for eight weeks and each Nimrod squadron provided one crew for the GRANBY detachment.

An operations centre was established at Seeb and equipped with the RAF's most advanced communications systems, which provided links to Royal Navy vessels at sea, to HQBFME, to RAF Kinloss and St Mawgan and to 18 Group Headquarters. The operations centre issued tasking messages for the Nimrods, provided standard air operations services and control to aircraft in flight, disseminated in-flight and post-flight mission reports to concerned coalition authorities and units, processed and distributed photographs and relayed in-flight tactical signals between aircraft and coalition naval forces.

At first, integrating the Nimrods into the multi-national MIF required a considerable amount of trial and error. A number of early complications arose involving a variety of force elements due to inadequate communication and unfamiliarity with the Nimrod operations area. On 18 August, a Nimrod flew beyond the northern limit of this area – the Straits of Hormuz. On the 24th, HMS York tasked a Nimrod to search the area allocated the American P-3s. On 4 September, a Nimrod was launched in complete ignorance of the fact that an Iraqi freighter was being intercepted inside its patrol area by a substantial American naval force, including

Independence, and was then subjected to multiple conflicting instructions from the carrier, from the USS La Salle and the USS Goldsborough. Another Nimrod unexpectedly encountered a live-firing exercise by F18s from Independence in its patrol area. On 10 October, HMS Gloucester warned the Persian Gulf Nimrod not to fly closer than 25 nautical miles (NM) to any warship – a directive that would have prevented the aircraft from conducting much of its assigned tasking.

In addition to the various incidents involving naval vessels and their supporting aircraft, and other maritime air reconnaissance units, random encounters with an array of land-based aircraft were an intermittent but unexpected and unwelcome feature of Operation GRANBY. Early on the morning of 20 August, a Nimrod operating in the Gulf of Oman gained contact with two UAE Mirage fighters closing from the west. Attempts to contact the fighters failed and, after locating the Nimrod by radar, they made several practice intercepts before retreating. The Nimrod crew considered the threat serious enough to warrant evasive manoeuvres and the deployment of chaff. Less than a month later, the Persian Gulf sortie was flying at low altitude to investigate a surface contact, when a Dornier civil aircraft carrying an ABC News team attempted to fly an identical course only 200 feet above the Nimrod. Again, evasive action was necessary.

The wrinkles within the MIF were soon ironed out – a process assisted by the fact that all units shared the common goal of rational co-ordination and collaboration. When established procedures failed, mistakes were generally acknowledged and remedial measures implemented. But air 'deconfliction' proved harder to achieve. During November, the Nimrods were involved in a series of menacing confrontations with other military aircraft. French and Omani aircraft were involved, as well as two Tornados of unknown (but not British) origin. Nimrods were 'locked up' by airborne interception radars on several occasions, and were again compelled to take evasive measures and release chaff. No hostile aircraft were encountered, but these incidents clearly illustrated the danger of blue-on-blue engagements and the threats inherent in lone actions by newly deployed or maverick aircrews from supposedly friendly nations, as well as the formidable airspace management challenges that were being generated by the density of coalition air operations.

With two Nimrod sorties being flown daily for the MIF, consideration had soon to be given to the resource implications of their involvement in the embargo against Iraq and Kuwait. When, after one month, there was still no sign of an Iraqi withdrawal, the component units of the MIF were left with no option but to plan for a long-term commitment.

The primary concern at Seeb, Kinloss and Northwood was that the deployed detachment was consuming a disproportionately high number of planned Nimrod flying hours, forcing reductions in scheduled flying in the UK. There was, however, some scope for economy. After a month of MIF operations, the Nimrod crews were finding ways to reduce the amount of time required to cover their assigned patrol areas. The Air Commander therefore agreed that

they should be allowed to return to Seeb as soon as they had completed their basic area surveillance task, rather than remaining airborne until their official 'off task' time. Many flying hours were saved as a result. Nevertheless, it was argued by the maritime air staff at both Riyadh and High Wycombe that the Nimrod's task could be fulfilled by a single daily sortie of maximum duration, if some of their operations area was transferred to American MPA. Yet no such change in tasking could occur without the agreement of the Royal Navy, and CTG 321.1 proved reluctant to accept that the Nimrods should fly only one sortie per day, believing that this would deny his Task Group the support it required.

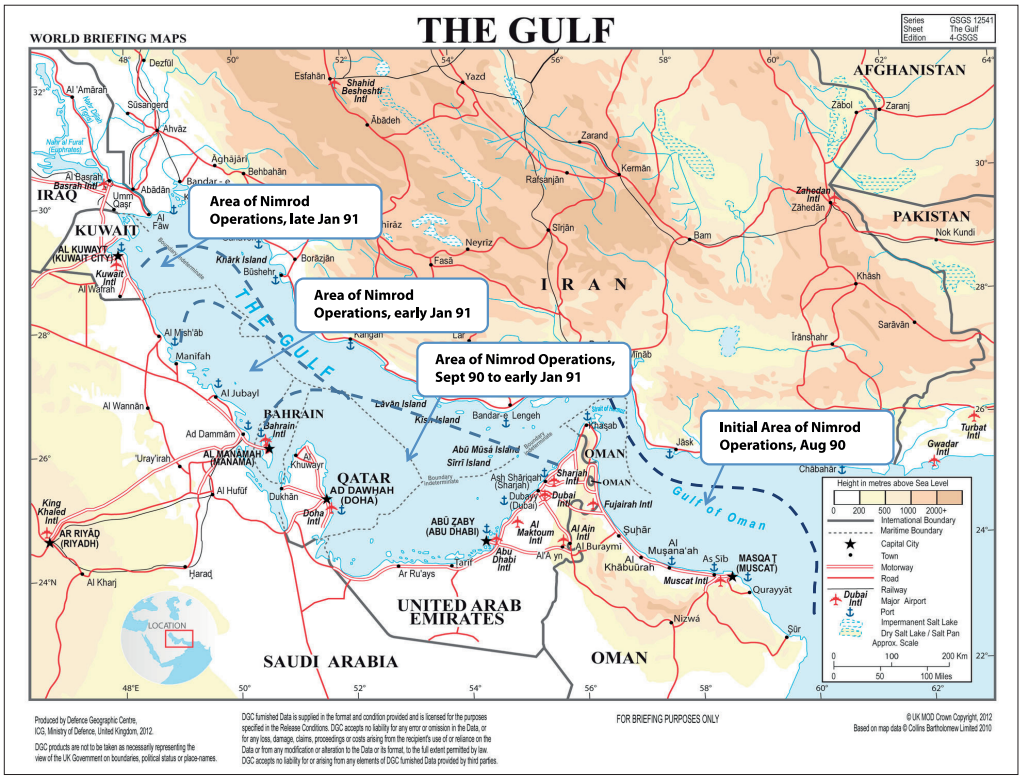
Thereafter, the issue of Nimrod flying hours languished, and the sortie rate continued at two per day for the duration of MIF operations. An assessment of how GRANBY was impacting upon Nimrod squadrons in the UK noted that important sacrifices were being made to maintain the Seeb detachment but concluded: '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.'

If the sortie rate remained constant throughout the MIF phase of the operation, so too did the frequency of surface contacts and challenges per Nimrod sortie. The RAF's Nimrod MR2 detachment flew 127 operational sorties between 15 August and 15 October, challenging 2,650 vessels, a rate of nearly 21 challenges per sortie. In both November and December, the average was 23 challenges per sortie. In total, the Nimrods challenged 6,325 ships, but the overwhelming majority were categorised as 'not significant'. In fact, the UN embargo 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 were encountered with some frequency during the early stages of the operation, and the Nimrods witnessed several boarding incidents involving the American, British and French navies, but their numbers were negligible by November. There could be no better illustration of the MIF's unqualified success.

Nimrod Search and Rescue Operations

At the end of September 1990, the Nimrod detachment was assigned a second task – SAR. In November and in January 1991, Nimrods participated in SAR exercises and in a number of 'live' SAR incidents. By the time Operation DESERT STORM was launched, a highly effective coalition SAR organisation had been established in which the Seeb detachment played an important role.

Given the prevailing assumptions regarding the capability of the Iraqi armed forces, coalition commanders had no option but to expect high casualty rates following the outbreak of hostilities, and to plan SAR accordingly. Fortunately, casualties were very low and there was little demand for SAR, but this does not mean that the Nimrod 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 it is not used.



Nimrod Operating Areas 1990 to 1991

The possibility of a SAR role for the Nimrod was considered from the very beginning of Operation GRANBY. The squadrons based at Kinloss and St Mawgan formed an important element within the UK SAR organisation and the aircraft deployed to Seeb were all equipped with bomb-bay loaded SAR equipment, including desert survival equipment. On 9 September, the Air Commander convened a meeting of the various RAF Detachment Commanders in the Gulf to discuss future roles and equipment requirements. A Nimrod SAR role was discussed at this stage, and the Detachment Commander afterwards took steps to integrate his aircraft into the emerging USCENTCOM SAR plan. The Nimrods were too vulnerable to operate in the immediate battle area, let alone behind enemy lines, but their assistance in locating aircrew brought down in the Gulf or in the Saudi Arabian desert promised to be invaluable. It was soon agreed that they should be incorporated in the theatre SAR organisation from 30 September. One aircraft and crew would be maintained at 90 minutes readiness for SAR operations and, if necessary, it was agreed that Nimrods might be diverted to SAR from other duties.

The SAR function was duly written into the draft Nimrod CONOPS in October, and the Nimrod's role was subsequently set out in a formal Combat Search and Rescue Plan issued by the USCENTCOM Joint Rescue Coordination Centre (JRCC). The plan required the Seeb detachment to provide appropriate forces for SAR and supervisory liaison personnel (the maritime cell at

AHQ), who would help to co-ordinate SAR support for all coalition forces. The detachment would be prepared to support and/or conduct SAR operations through the JRCC and the RAF maritime cell at Air Headquarters. A Rescue Co-ordination Centre (RCC) was to be established at Seeb.

Two SAR exercises were planned for November – one at sea, one on land. In the sea exercise, the participating Nimrod was tasked with locating a downed aircrew, dropping survival equipment and calling the JRCC for assistance. There was similar tasking in the land exercise, but the Nimrod was also to function as airborne mission commander. Even before the first exercise, however, the Nimrod detachment became involved in a 'live' SAR incident when, on 13 November, an RAF Jaguar crashed in the Saudi Arabian desert. The airborne MIF Nimrod was re-tasked on to SAR and proceeded to the crash site, assuming the role of on-scene commander and then passing the task to a second Nimrod, which acted as a communications platform for other coalition units in the area. Sadly, the Jaguar pilot died in the crash.

The sea exercise, mounted two days later, ran according to plan, but the land exercise was transformed into a live incident when a sandstorm prevented the rescue helicopter from reaching the personnel acting as 'survivors'. As they were thus confronted by the prospect of a night in the desert with no suitable equipment, a Nimrod was directed to the scene and dropped Containers Land Equipment (CLE) – the first occasion upon which Nimrod CLE had ever been used 'in anger'. The survivors later commented favourably on the contents of the pack. Unfortunately, on the following day, the Nimrod was unable to relocate the survivors and they were eventually found and rescued by helicopter. Problems with the ground radio were partly to blame, but the episode reinforced doubts about the Nimrod's navigation system, the accuracy of which had been under scrutiny for some time. The installation of GPS – then a new and revolutionary technology – was proposed as an effective remedy.

The key lessons from the exercises concerned communications. The Nimrods had been handicapped by their lack of access to US national cryptography, and by the fact that they were not equipped with secure high frequency (HF) radios. Both of these issues were fully addressed over the following weeks, and the next sea and land SAR exercises went largely according to plan. During the sea exercise, the single Nimrod engaged in MIF duties was unexpectedly re-tasked to assist a Cypriot merchant vessel, which had apparently hit a mine and was sinking. The Nimrod contacted two nearby ships and remained at the scene until the first arrived.

By mid-January 1991, a well prepared and highly effective SAR organisation had been established, capable of dealing with a wide range of operational contingencies. In the event, fortunately, coalition casualties were light during Operation DESERT STORM, and SAR was rarely needed. Nimrods were only involved in SAR missions on 29 January and 3 February, but the first was soon taken over by the Omanis and the second regrettably yielded no survivors.

As early as 22 January, the Nimrod Detachment Commander requested permission to relax the 90-minute readiness state for SAR, but he was to be disappointed. The AHQ insisted that the SAR capability was essential and had to be maintained, even if it was rarely called upon: 'SAR was ever thus.'

Nimrod Direct Support Operations

By mid-December 1990, the 'DESERT SHIELD' phase of Operation GRANBY was nearing its conclusion. It had become clear that neither international condemnation nor UN sanctions were likely to persuade Iraq to withdraw her forces from Kuwait; the only alternative was military action. The cessation of MIF operations freed the Nimrod detachment for alternative roles: in mid-January, they commenced DS ASUW operations under the TACON of the US Navy Task Force 154.

This new role for the Nimrods was first discussed at a conference onboard the USS La Salle on 16 December, attended by the Nimrod Detachment Commander, Wing Commander Neal, and his designated successor, Wing Commander Andrew Wight-Boycott. The Americans proposed that, in the event of hostilities, the Nimrods should assist offensive operations in the Northern Persian Gulf by locating Iraqi fast patrol boats (FPBs), which posed a significant threat to coalition naval units. At a second conference on 9 January, the Americans reiterated their concerns about Iraqi 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. Their problem was that there were not enough P-3s to maintain continuous coverage of this area, and they duly asked for assistance with night-time surveillance from the Nimrod detachment. After careful consideration, the Air Commander approved the request five days later.

The DS role provided a rigorous test of the Nimrods' equipment and the professional competence of their crews. The area under surveillance was crowded with rigs, well heads, channel marker buoys and wrecks, which were all difficult to distinguish from small naval vessels using sensors alone – without visual confirmation. Only by careful day-to-day comparisons of the surface picture could new contacts be located. The Nimrods had then to supply regular updates on the contact's position, course and speed to allow it to be identified by the Surface Unit Combat Air Patrols (SUCAPs), using infrared equipment. Sometimes, the Nimrods also vectored the SUCAP to the contact, if it was assessed to be hostile.

The new role involved an entirely different flying routine. Within the space of 24 hours, the Nimrods were switched from low-level daytime sorties to medium-level (up to 14,000 feet) flying at night. Operating at this altitude, the Nimrods could more easily identify new surface contacts, but flight safety and self-protection were also important considerations. Initially, the Nimrods flew north-west to 28° North 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 avoid blue-on-blue

incidents. Nimrods always flew with their navigation and anti-collision lights on, and many routine flying procedures were simplified, such as the normal practice of regularly changing call signs. As the Detachment Commander recalled, 'We kept to the same call sign 'Dylan' day in day out because everyone knew that was the Nimrod.'

The first Nimrod DS mission was flown on 15 January, and a number of engagements with Iraqi naval vessels soon followed. On 21 January, a Nimrod located four contacts of interest (COIs), and provided regular situation reports on their position to a SUCAP, which subsequently engaged all the targets; next day, a Nimrod identified three fast moving contacts, tracked their progress, and then passed them on to an American P-3. On 24 January, the first sortie located an Iraqi salvage ship, which was then attacked by an American A-6.

On 30 January, the second Nimrod sortie located two COIs during a survey of the Kuwaiti and Iraqi coasts; on 4 February, Nimrods reported three new contacts and monitored the activities of two others. On 6 February, the first sortie detected and reported an Iraqi FPB, which was afterwards attacked by the SUCAP and destroyed. Two further surface vessels were destroyed by the SUCAP during the second Nimrod sortie.

0n 7 February, the Nimrod operations area was extended all the way up the Gulf. Aircraft then adopted a patrolling position about 30 miles off the Kuwaiti coast opposite Faylakah Island. 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 A-6 that very day. On 10 and 11 February, Nimrods gained a total of four contacts, but none was successfully engaged by the SUCAP; on the 15th, Nimrods vectored attacking forces on to another target en route for Faylakah. On 19 and 22 February, vessels located by RAF Nimrods were again attacked by the SUCAP.

From 26 February, it was possible to reduce the sortie rate to one per day; thereafter, Nimrod operations were progressively scaled down. The final DS sortie was flown on 15 April 1991, and the last Nimrod in theatre flew back to the UK two days later.

The Nimrod Enhancement Programme

The Nimrod MR2 was equipped with an extensive range of enhancements during Operation GRANBY to improve its self-defence, communication, surveillance and navigation capabilities. Some of these 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 via 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.

Together, these systems turned the Nimrod MR2 into a very much more capable asset. GPS provided an extremely accurate radar plot stabilisation, and became standard equipment for the Nimrod fleet after GRANBY. Link 11 was described as 'exceptional'. Along with Mk 12 IFF (Mode 4) and secure UHF, it eased considerably the task of integrating the Nimrods into the coalition force. Nevertheless, GPS, Link 11 and several other systems procured for GRANBY only entered service during the last two months of the operation; the majority of Nimrod sorties flew without them.

A particularly high priority was assigned to new self-defence provisions. In Operation GRANBY, the Nimrods were confronted by a far more hostile environment than they were normally accustomed to, and their potential vulnerability to both enemy action and blue-on-blue was a constant source of concern. An elaborate self-defence suite was ordered for the aircraft in September 1990, developed and tested with remarkable speed during the following months and introduced into service in January 1991.

At the beginning of the operation, the Nimrod's AN/ALE 2 chaff system was not fit for purpose. Designed to enable Vulcan bombers to lay chaff corridors, it was never intended for self-defence, and the dispensers were substantially worn out by 1990, in any case. 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. By 10 September, the MOD was considering the development of an integrated self-defence suite for the Nimrod, comprising a modified AN/ALE flare dispenser, the BOZ pod, a Marconi TRD and a Loral AN/AAR Missile Approach Warning System (MAWS). The MAWS would warn of approaching missiles and automatically activate the flare, chaff and TRD systems. But could reliable enhancements be developed in time for GRANBY? The installation of tried and trusted equipment, such as the MAWS and BOZ pod, appeared relatively straightforward, but the TRD was still highly experimental.

The MOD sought to hasten the introduction of the self-defence suite and secure the earliest possible installation of the BOZ pod. 'This would give the Nimrod MR some self-defence capability as soon as possible.' UORs covering all the equipment had been approved by the second week of October, and the modified ALE 40 flare dispenser had been tested in flight. The MAWS and the BOZ pod were successfully trialled at the end of November, although the MAWS manifested a high false alarm rate, and was only cleared subject to certain operating restrictions and modifications. The TRD was released for trials in mid-December and apparently performed as expected. Its installation was duly recommended, and the MOD afterwards claimed credit for cutting the expected production time scales by a month. The first fully modified Nimrod MR2, XV255, arrived at Seeb on 21 January 1991.

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

far superior to the antiquated and ineffective chaff dispensers available at the beginning of Operation GRANBY. Nevertheless, the fact remains that for five out of little more than six months of operations in the Gulf, the Nimrods executed their tasks in a hazardous and potentially hostile environment without any effective self-defence capability. Moreover, while the MAWS/BOZ pod combination was favourably received at Seeb, XV255's TRD had a short and unhappy service history. During an early trial deployment, 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. Worse was to follow. During a night sortie on 29 January, the TRD broke away from its cable and fell into the sea. Further problems with the system – by far the most expensive part of the self-defence suite – led to all TRDs being removed from the Nimrod fleet later in 1991 pending further development work.

Nimrod Command and Control

Historically, the command and control of MPA has not always proved straightforward. MPA may, of course, contribute to air and sea operations; both air forces and navies therefore have a vested interest in their deployment. In many countries, notably in the United States, they are primarily viewed as naval assets that should operate under naval command; elsewhere, particularly in the UK, maritime air reconnaissance activity has been subordinated to air forces. Even then, however, the naval interest in MPA has invariably been recognised, and naval forces have exercised a considerable influence over their utilisation.

In the UK, the precise division of authority between the RAF and the Royal Navy has periodically been a cause of dispute. Inter-service co-operation was improved by the joint location of 18 Group and CINCFLEET headquarters at Northwood, but this very effective arrangement was unfortunately suspended at the beginning of Operation GRANBY. 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 were well known, understood and practised'. Yet this contention cut little ice. Thus, it is perhaps not surprising that the familiar arguments over MPA command and control began to reappear soon after the RAF's Nimrods were committed to the MIF. They were only resolved in the final weeks of September 1990, when the GRANBY chain of command was completely reorganised.

The preliminary command and control arrangements for the Nimrod detachment, drawn up on 10 August, have already been described. Operational command was assigned to the Joint Commander, the Air Commander exercised operational control and the Detachment Commander held tactical command, with the caveat that tactical control might be delegated to CTG 321.1 or other naval forces. But this latter provision was open to two interpretations. First, as understood by the air command chain, it could mean 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 Air Commander, on numerous occasions.

Alternatively, in the view of some naval commanders, it implied that CTG 321.1 was the rightful tasking authority for the Nimrod detachment. It is not difficult to understand the frustration they must sometimes have felt working closely with a navy that commanded its own maritime air reconnaissance fleet.

The essence of the problem was that Task Group 321.1 had been operating 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 included in the GRANBY chain of command, remaining directly responsible to CINCFLEET. 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. On the one hand, the detachment had a designated role in Operation GRANBY, which the Air Commander was determined to maintain; on the other, it was potentially subject to the TACON of CTG 321.1 under CINCFLEET.

By early September, the Royal Navy was actively promoting the argument that it should function as Nimrod tasking authority, but the potential transfer of TACON to CTG 321.1 was at first prevented by the inadequacy of communications between the Task Group and the Nimrod detachment. Increasingly, however, maritime air reconnaissance officers in both the Gulf and the UK began to question the wisdom of transferring TACON on other grounds. On 26 August, the Air Force Operations 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: 'It surely would be preferable to have the same command and control chain for all the UK maritime assets.'

Within the Air Headquarters at Riyadh, there were more immediate concerns. As part of the UK contribution to Operation GRANBY, the Nimrod detachment could, potentially, perform a wide variety of functions in co-operation with coalition units from other countries – notably the United States. The detachment established a close working relationship with the USS Independence during the early stages of the embargo: Independence was instrumental in the development of routine operating procedures for the Nimrods following their arrival in the Gulf and they enjoyed better communications with Independence than with HMS York for several weeks. They passed all surveillance information to the American vessel as a matter of course and regularly responded to US Navy tasking requests.

In summary, the Nimrods were extremely versatile assets, capable of supporting several coalition navies at very short notice. Moreover, from 8 September, they performed these functions across a larger operational area than was served by other MPA. This was facilitated by the flexibility of the initial command and control arrangements. By contrast, it appeared that the Nimrod detachment's services might be far more narrowly confined to operations in close support of the Royal Navy's principal tasking vessel, if TACON was vested in CTG 321.1. The broader requirements of other navies might well be neglected.

The practical problems that initially prevented the transfer of TACON took longer to overcome than originally expected. HMS York spent much of her time at sea in the Persian Gulf, while the Nimrods continued to fly over the Gulf of Oman; communications between the two regions were far from reliable. With full naval agreement, TACON therefore remained with the Nimrod Detachment Commander throughout August. However, early in September, CTG 321.1 came under pressure from CINCFLEET to secure the transfer of Nimrod TACON, and duly announced his intention and readiness to do so. He was blocked by the Air Commander, who believed that the existing command arrangements were satisfactory.

Underlying this impasse lay a broader debate on Operation GRANBY command and control, which was ongoing in London and High Wycombe. During the following weeks, the pressure to establish a genuinely 'Joint' command, encompassing all three services, mounted inexorably. But the Chief of the Naval Staff (CNS) favoured the continued division of either full command or operational command between the Joint Commander and CINCFLEET, whereas the Chief of Defence Staff (CDS) was determined to see full command unified under the Joint Commander. The precise means by which this unification was to be accomplished remained unclear for some days, however, and it was at this time CTG 321.1's efforts to obtain TACON of the Nimrod detachment became particularly insistent.

Fortunately, the issue was largely resolved in mid-September. On the 13th, after a meeting of the Chiefs of Staff, CDS directed that Operational Command of all UK forces in the Gulf would be vested in the AOC-in-C Strike Command, as Joint Commander. Operational control, previously held by the Air Commander, would now belong to the newly created Joint Forces Commander, the Commander British Forces Middle East (CBFME), while tactical command of RAF units was assumed by the Air Commander. When a formal Concept of Operations 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 could be delegated to the naval units concerned throughout the on-task period. The only shortcoming in this arrangement stemmed from the fact that both CTG 321.1 and the Air Commander now held tactical command of their respective units and reported directly to the CBFME. The potential therefore existed for the naval Task Group commander to raise maritime air reconnaissance matters directly with the CBFME, bypassing the Air Commander in the process. This actually happened twice during December, but did not recur thereafter. When the Nimrod detachment became involved in DS 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 CTG 321.1.

The Nimrod 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 Nimrod's 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° North; later in September, the limit was moved to the Western Persian Gulf (28° North), and the area was extended into the Northern Persian Gulf to 28.30° North at the beginning of January 1991, before reaching 29° North 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.

Careful deliberations were required before extensions were agreed. A balance had to be maintained between the operational advantages of flying further north (in terms of improved surface surveillance) and the risk posed by hostile air defences to the vulnerable Nimrod. Generally speaking, at each successive stage, the Royal Navy pressed the operational side of this argument while the RAF proved more cautious.

For the RAF, aircraft safety was the paramount consideration. Large, slow and poorly equipped for self-defence, the Nimrod would have made an easy target for hostile combat aircraft or surface-to-air missiles. But interception was by no means the only concern. As we ave noted, airspace management became increasingly challenging as more and more coalition aircraft crowded into the Gulf. It took time to establish effective inter-service and coalition communications systems and operational procedures. Moreover, in determining the boundaries of the operations area, the sensitivities of nearby Gulf states had also to be respected.

Finally, the whole issue was complicated by the debate on Nimrod TACON. It is no coincidence that, while the Royal Navy was attempting to secure 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. For all these reasons, then, the extension of the Nimrod operations area proved a difficult and controversial process.

By the final week of August 1990, the Nimrods were 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, as we have seen. However, on 28 August, the Royal Navy's Flag Officer Flotilla 2 (FOF2), who was visiting naval forces assigned to the Armilla Patrol, met the Nimrod Detachment Commander and proposed that Nimrods should support naval vessels inside the Persian Gulf. Wing Commander Neal responded that he and CTG 321.1 had agreed to restrict Nimrod operations to the Gulf of Oman for the time being.

There were no proper grounds for FOF2 to intervene in this way. Any extension of the Nimrod operations area had to be approved by the Air Commander, and this would still have been the case if TACON of the Nimrod detachment had been delegated to CTG 321.1. Such authority as the task group commander exercised over the detachment's activities stemmed only from his position as commander of naval assets in theatre, and was exercised entirely on the Air Commander's behalf. It was not the intention that officers senior to CTG 321.1 in the Armilla

command chain should influence the deployment of MPA or any other assets assigned to Operation GRANBY.

Nevertheless, the following day, FOF2 met the CTG 321.1 and persuaded him that the Nimrod operations area should be extended into the Persian Gulf. The Nimrod Detachment Commander found himself in an awkward position. While he had no desire to jeopardise relations with the Royal Navy, he believed that the Nimrods should continue to operate over the Gulf of Oman, providing 'early warning in one direction and safety net in the other', although he was 'most happy to show presence by sorties on opportunity basis, and to operate when required against any specific target or with specific tasking.' CTG 321.1 refused to accept this argument, but the Air Commander then intervened to support the Detachment Commander's position. In his view, there was no operational justification for Nimrod sorties in the Persian Gulf, especially at a time when air missions in the area were being hampered by a number of obstacles, including air traffic control and diplomatic clearance problems.

This dispute was hardly a propitious beginning to maritime air operations in the Gulf. However, the operating environment was changing rapidly and, after a face-to-face meeting with CTG 321.1 on the morning of 5 September, the Air Commander signified that he was not merely willing but 'very keen that Nimrods carry out PG area familiarisation to demonstrate operational capability and prove co-operation procedures.' The documents provide no explanation for this abrupt volte face, but the incident demonstrated how apparently major disputes could be overcome quite easily through informal discussion. 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, the Nimrod Detachment Commander welcomed the move of one daily sortie into the Persian Gulf, as the Gulf of Oman was becoming increasingly crowded by the second week of September. But the new northern flying limit, 26.30° N, itself soon proved inadequate. On 19 September, the Detachment Commander asked for an extension to 27.30° N to track a group of Iraqi tankers in the Northern Persian Gulf, and a similar request was received from Task Group 321.1 the following day. As the area was protected by continuous Combat Air Patrol (CAP) and AWACS cover, permission was immediately granted. A further extension to 28° N quickly followed for Royal Navy vessels, and the same provision was made for the Nimrods to ensure that MPA support could be made available for naval forces if necessary, subject to further measures 'to ensure 100% safe operations'.

The operations area remained unchanged for the next two months. Any move beyond 28° N would have implied the violation of an Iraqi exclusion zone beginning at 28.20° N, and seemed certain to encounter opposition. So it was not until December that the debate was renewed by the new CTG 321.1, who requested Nimrod coverage up to 28.30° N – the same latitude as Kuwait's southern border. The Air Headquarters hesitated once again, and then approved the

extension only if 'there was a specific task to do and specific and dedicated defensive measures were taken in support of the Nimrod'.

CTG 321.1 then decided to bypass the Air Headquarters and approach the CBFME directly. Further extensive deliberations followed, after which the proposal was referred right back to the MOD. No decision had been reached when, on 14 December, the Royal Navy requested permission for the Nimrods to loiter at the very limit of their operations area to collect data on Iraqi mining activities in the Northern Persian Gulf. This was strongly opposed by the air command chain because, to be of any value, such missions would have had to be flown continuously – an impossible task with the available resources. It was also doubted that the operational benefits would outweigh the increased risks.

The US Navy then intervened. It was on 16 December that they first asked for Nimrod Direct Support against Iraqi FPBs in the Northern Persian Gulf. The Detachment Commander and his designated successor were eager to secure this new role for the Nimrods, but recognised that clearance would be required to fly up to 28.30° N. The American plan brought both the detachment and the Air Headquarters closer to the Royal Navy and the Joint Forces Headquarters (JFHQ), but no general expansion of the operations area was granted by the MOD until 1 January. Even then, any missions north of 28° N had to be approved by the BFCME, a problematic stipulation as the American plan necessitated a 24-hour MPA presence up to 28.30° N.

On 7 January, the Nimrod Detachment Commander proposed that a daily sortie be mounted up to 28.30°, a somewhat liberal interpretation of the MOD's ruling that the Air Commander felt compelled to challenge. 'This will only proceed with my specific authority – which should be sought a day or so beforehand,' he insisted. Even the commencement of Nimrod DS operations did not at first persuade him to alter his stance, as he believed that the information collected at 28.30° N would be only 'marginally better than that collected at 2800N'. He would only approve Nimrod missions north of 28° N on a case-by-case basis and with the assurance of dedicated support from EP-3 electronic intelligence aircraft and a CAP. General authorisation for such missions was not granted until 18 January.

History soon repeated itself. The first sortie to fly in the DS role was asked by a British naval vessel to fly to 29° N to make a visual identification of a radar contact; quite correctly, the Nimrod crew refused, but the Royal Navy afterwards protested strongly: 'If crew not prepared to go to 29N and visually identify contacts, they are no use and will not be tasked or required.' A large part of the problem stemmed from the fact that American P-3s had been authorised to fly up to 29.30° N with CAP cover. The Royal Navy may have assumed that the Nimrod operations area had been extended to the same latitude. As further difficulties appeared likely unless Nimrod and P-3 missions were brought into closer alignment, the AHQ agreed to sanction Nimrod sorties up to 29° N, subject to the conditions already laid down. Time spent north of this latitude was to be kept to a minimum, and positive control by an Air Control Unit (ACU) was to be maintained at all times.

After the outbreak of hostilities and the rapid collapse of Iraq's air defences, the extension of CAPs to the Gulf's most northerly extremes enabled MPA to fly beyond 29° N, and the Americans eventually decided that their P-3s should 'go all the way up'. Again, the Nimrod operations area was similarly enlarged to encompass 'the entire Arabian Gulf north of 2830N', although aircraft were to remain clear of Iraqi and Kuwaiti territory, and of Iranian territorial waters.

Diplomatic Clearance for Nimrod Operations

In 1990, the UK's maritime air reconnaissance effort was largely focused on the North Sea and the North Atlantic – a very open operating environment, where diplomatic clearance ('dipclear') created few difficulties. Even in more enclosed theatres, such as the Mediterranean and the Gulf, obtaining clearance for overflight was usually a straightforward matter provided that the necessary formalities were respected. However, the dipclear issue proved very much more complicated during the Gulf conflict.

A minority of Gulf states, notably Iran, detached themselves from the impending conflict and declared their determination to maintain the integrity of their territorial waters and airspace. Dipclear problems with such countries were expected. There were no diplomatic relations between the UK and Iran in 1990, and the Iranians had also protested periodically about alleged violations of their airspace by Nimrods involved in Operation MAGIC ROUNDABOUT. Iranian territorial waters imposed their own constraints on the Nimrod operations area, but Iran had also created a so-called 'advisory zone' (IAZ), extending further into the Gulf, the status of which was uncertain. Permission to fly inside the IAZ was sought through the medium of the Iranian mission to the UN in New York, and was duly received, but the MOD imposed a buffer zone of three NM outside Iranian territorial waters, which was out of bounds for Nimrod missions. In time, the Air Headquarters became concerned that this was restricting the scope for monitoring suspect merchant vessels close to Iran, and requested permission for the Nimrods to operate up to the limit of Iranian territorial waters. However, after discussions between the MOD and the Foreign Office, the request was denied. It was considered that the benefits of flying inside the buffer zone would be outweighed by the increased danger of infringing Iranian airspace. In short, overflight problems with Iran were predicted, and operations were directed with the aim of minimising the potential for friction.

Far more surprising was the fact that certain coalition members, particularly the UAE, were also sometimes less than co-operative. Elements within the UAE political and military hierarchy apparently believed it was necessary to make periodic 'gestures' to coalition forces to emphasise their country's sovereign status, involving both rigid enforcement of, and marked departures from, established dipclear practice. As the UAE lies directly between Seeb and the Persian Gulf, this created a major source of difficulty for the Nimrod detachment. Without dipclear to transit through UAE airspace, Nimrod Persian Gulf sorties had to fly via the Straits of Hormuz, taking longer and consuming more fuel. Moreover, UAE

restrictions had the potential to prevent Nimrod surveillance of important areas of the Kuwaiti coast.

The first threat of UAE obstruction, involving two Mirage fighters, has already been described. On 1 September, a Nimrod operating over the Gulf of Oman was challenged by UAE ATC and told to remain at least 25 NM clear of the UAE coast; operations to within 6 NM had previously been flown. No explanation was readily forthcoming. The operational implications of the 25 NM restriction were serious: Nimrods would be prevented from monitoring shipping movements around the Fujairah tanker park, near the UAE coast, where several Kuwaiti tankers had previously been identified. The British Military Attaché in Abu Dhabi was asked to raise the issue with the UAE authorities immediately. Nevertheless, airborne Nimrods encountered further problems on 2 and 6 September.

There was renewed friction on 8 September, when Nimrod missions began over the Persian Gulf. Dipclear to transit over the UAE was obtained but then withdrawn by UAE ATC, acting under military direction; the aircraft subsequently flew via the Straits of Hormuz. After bilateral discussions, procedure was changed, the Nimrod detachment being directed to file flight plans and request dipclear at least 24 hours in advance. This stipulation was not welcomed by the Detachment Commander, as it promised to present a major obstacle to short-notice tasking, but provision was made for 'crisis' warnings, which only required three hours notice, and 'VIP' warnings requiring only one hour. An aircraft movement notification system was introduced, whereby RAF detachments would fax their flight details to the UAE Joint Operations Centre at Abu Dhabi.

Initially, the new system failed. Nimrod transits were blocked on 13 and 15 September, the aircraft movement notification system was suspended and the detachment was told to 'revert to full dipclear requests'. Over the following days, Nimrod missions were 'severely hampered by inability to arrange UAE dipclear at short notice', and UAE representatives even demanded access to Nimrod mission reports and proposed that a UAE serviceman should fly in all Nimrods transiting through UAE airspace.

Ultimately, the impasse was substantially overcome through the deployment of an ATC-qualified RAF liaison officer to the UAE. After his arrival, it quickly emerged that the more intrusive UAE proposals had been part of an entirely separate series of discussions, and were not preconditions for dipclear, and the focus then returned to the fax-based aircraft movement notification system, which was finally made to work. For urgent operational needs, it was agreed that the clearance process could be initiated by a simple telephone call from the detachment to the RAF liaison officer in the UAE, stating call signs, route, entry and exit points and times. 'UAE authorities appear to have gained confidence in system and a rapport exists,' the RAF liaison officer signalled on 26 November, but he acknowledged at the same time how important it had been to introduce the 'human element' into the dipclear system. 'The bottom line', he wrote, 'is [that] if I don't know then they won't know and they will turn you away.'

Although this problem was effectively dealt with, the Nimrods were still forbidden to overfly UAE territorial waters, so that the dispositions of at least some merchant shipping lay beyond their powers of surveillance. Early in December, permission was sought to fly up to 3 NM from the UAE coast. No response is recorded, but the Persian Gulf mission was prevented from operating within 12 NM of the coast on 8, 9 and 10 December. A mission to within 3 NM of the coast was approved on 22 December but the 12 NM restriction was applied again on the 30th. Personal differences or jurisdictional disputes within the UAE government and armed services were probably responsible; diplomatic pressure from the UK could only provide part of the solution. Fortunately, the issue lost much of its importance when MIF operations ceased, and the Nimrods were transferred to the DS role.

Conclusions

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 complex coalition operations 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. It is to the credit of the Nimrod crews that they were rarely to blame when the established procedures broke down, as they did on several occasions during the first two months of the embargo against Iraq. Happily, by October, these teething troubles 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 other parts of this study. The demands of the Gulf theatre were such that the Nimrod required extensive enhancements, but fully modified aircraft only became available after the start of DS operations, and some new equipment proved defective. To this extent, the Nimrod enhancement programme provides an illustration of the importance of long-term planning in procurement policy. New equipment takes too long to develop for acquisition to be dictated by very short-term operational requirements. Such an approach may not produce dividends in time to affect the outcome of a war of brief duration, and attempts to accelerate the production timetable by cutting corners or pressing contractors can inflate costs and reduce the utility of the end product.

Further problems were raised by command and control, the expansion of the Nimrod operations area, and by overflight restrictions. 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. Consequently, there was scope for the Nimrod detachment to be removed entirely from the GRANBY command chain, a course that appealed to senior naval officers after the normal channels of naval influence over maritime air operations were suspended. The resulting dispute over Nimrod TACON was only settled when all Gulf units were placed under the command of JHQ.

Where the operations area was concerned, although RAF maritime air reconnaissance squadrons were naturally accustomed to working with the Royal Navy, they rarely did so in environments where there was a significant threat to the Nimrod. In these new circumstances, the different concerns of the two services were exposed all too clearly. Responsible both for conducting operations and safeguarding, in the Nimrod detachment, a very valuable but vulnerable asset, the RAF refused to extend the operations area without carefully considering the risks involved. By contrast, naval support for extension was based overwhelmingly on the operational advantages that were expected to accrue. The various disputes, although ultimately resolved, demonstrated that there was still a need for improved dialogue between the two services, especially when joint operations were launched at short notice in unfamiliar theatres.

Then, finally, there was the dipclear issue. Again, while this had rarely impacted upon maritime air reconnaissance activity in the NATO area, 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.

In summary, there were many lessons for the Nimrod MR2 force to learn from Operation GRANBY. Nevertheless, in the light of the numerous obstacles that confronted the Seeb Nimrod detachment, their achievement appears all the more impressive. Throughout, 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.

[1] This study is based on the Air Historical Branch narrative, *The Royal Air Force in Operation Granby: Maritime Air Reconnaissance Operations*, prepared by AHB1.