

CHAPTER 5

FOCUS ON EUROPE

A part from the world-wide operations, the history of the RAF from 1945 to the early 1990's was dominated by 2 factors; firstly, from 1945 until 1969 the RAF was responsible for the creation and operation of the British strategic nuclear deterrent; secondly, from the mid-1960's drastic economies in defence expenditure which radically altered the deployment, the size and the shape of the RAF, as they did for the other 2 Services.

TECHNOLOGICAL LEGACY

By the end of the Second World War the jet, missile and nuclear age had arrived. The problems for the British Government and the RAF were whether Britain should develop its own atomic bombs and, if they were to be developed, what type of aircraft would be needed to drop them. The Labour Government of Mr Attlee, which came to power in June 1945, decided that United Nations organization was not strong enough to enforce any international control over atomic energy development. If the USA was not to have a monopoly of the new weapons, Britain must develop its own nuclear weapons to safeguard its own security. That decision was made, after much political heart-searching and despite the strong opposition of some members of the Labour Party, on 8 January 1947. The Air Staff had, however, anticipated the decision by issuing, in the previous August, a requirement for an atomic bomb. They had also, in November 1946, issued a draft requirement for a new bomber that could deliver the atomic bomb. This specification was for a 4-engined bomber with a greater range, twice the speed and twice the height over the target of any existing bomber. On 9 January 1947, the day after the Government's decision to develop an atomic bomb, the leading aircraft manufacturers were invited to design and build the new bomber. These 2 decisions, plus, of course, the doctrine of the strategic air bombardment, were, therefore, the foundations of a strategic nuclear deterrent force - the V-force of Bomber Command, whose creation and deployment was the single most important and costly activity of the RAF between 1945 and 1969.

GUARDIANS OF THE STRATEGIC NUCLEAR DETERRENT

Bringing a strategic nuclear force into operation took nearly 10 years after those decisions were made. During that time the western deterrent was in the hands of the strategic air forces of the USAF and the political leaders of the West were primarily occupied with the possibility that the Cold War could escalate into Third World War. The confrontational situation in Europe at the time of the Berlin Airlift has already been seen. It led to USAF B-29s being deployed in Britain and the creation of the North Atlantic Treaty Organization (NATO) in 1949. It also, along with the outbreak of the Korean War in 1950, led to the largest ever peacetime UK defence budget to provide for an expansion of men and equipment (£4,700 million was to be spent over 3 years, 1951-54, compared with less than £800 million spent annually before 1950); the recall of reservists and the extension of National Service to 2 years gave an active strength of nearly 900,000 for the 3 Services; RAF strength was over 270,000 of which about one-third was National Servicemen.

EARLY 1950s: FILLING THE CAPABILITY GAP

Even with the expansion and attempts to speed up the development of the new jet bombers, the RAF had a serious gap in its front-line aircraft in the early 1950s. The swept-wing fighter was slow to come into service with the RAF, in spite of the success of the Meteor jets in the last year of the Second World War. This was because the decision had been made (mistakenly as it turned out) that supersonic aircraft were too dangerous to warrant further research. In 1946 the Director-General of Scientific Research (Air) said: “The impression that supersonic aircraft are just around the corner is quite erroneous ... the difficulties will be tackled by the use of rocket-driven models. We do not have the heart to ask pilots to fly the high-speed models, so we shall make them radio-controlled”. To bridge the gap, by arrangement with the United States, 430 Canadian-built F-86 Sabres equipped Fighter Command and squadrons in Germany between 1950-55.



112 Squadron Sabres January 1956, Sabres in Greenland during ferry over October 1953

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Under the same agreement, 88 B-29s (renamed Washingtons) came into service with Bomber Command between 1950-53, and 50 maritime reconnaissance Neptunes were operated by 4 Coastal Command squadrons between 1952-53.



Neptune 236 OCU Kinloss April 1955, 115 Squadron Washingtons over the North Sea

The B-29 was larger and more complicated than the Lancasters and Lincolns then in service with Bomber Command, but it did have the ability to strike at longer range (the last Lancaster left Bomber Command in March 1950, but Coastal Command continued to operate Lancasters until October 1956). The B-29 also brought pressurization, which they were to have in the jet bombers, to RAF bomber aircrews for the first time.



The last operational Lancaster, RF325, taxis for the last time (RAF St Mawgan)

THE CANBERRA



50 Squadron Canberra B2

The RAF did have an outstanding success with the world's first medium jet bomber, the Canberra, which entered squadron service in May 1951. This aircraft, which began life as a private venture by English Electric, was the success story of British military aviation since 1945, rivalling the Mosquito for its versatility. It was built in 20 different types, exported in large numbers and even built under licence in the USA for service with the USAF. (As the RB-57 it was still in service as a high-level reconnaissance aircraft during the Vietnam War). By the middle of 1955 the Canberra force in Bomber Command and in the Second Tactical Air Force in Germany had been built up to over 250 aircraft and in 1958 it was given a nuclear capability.



Wg Cdr A Humphrey and his navigator

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The early RAF Canberras achieved some notable aviation records; in October 1953, Flight Lieutenant Burton and Flight Lieutenant Gannon won the London-New Zealand Air Race covering the 12,270 miles in 23 hours 50 minutes 42 seconds; in December 1954, Wing Commander Humphrey (later to be Chief of the Air Staff and Chief of the Defence Staff) and his navigators, Squadron Leaders Powell and Bower, set a new record between London and Cape Town, 6,009 statute miles at an average speed of 486.6 mph. When the V-Force bombers arrived, some Canberra squadrons were disbanded, but others remained as tactical strike and reconnaissance forces in Germany and the Near East until the 1970s. The Canberra PR9 variant is still in service today with No 39 (IPRU) Squadron, RAF Marham, who operate this well proven airframe in the Reconnaissance role. The first production PR9 first flew in 1958 and the current operational PR9s are forecast to remain in service beyond 2006.

THE V-FORCE



Valiant, Victor, Vulcan 1960

The term V-Force originated from the bomber's names - Valiant, Victor and Vulcan. The first V-bomber the Valiant, came into service in 1955. The Valiant was used to drop the first British atomic bomb at Maralinga, Australia, on 11 October 1956 and, after the Government had decided to follow the USA and Russia into the thermonuclear age, to drop the British H-bomb at Christmas Island in the Pacific on 15 May 1957.

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49 Squadron Valiant drop result 8 November 1957 GRAPPLE trials

With the Canberras, the Valiants took part in the 1956 Suez Operation when they were used in the high altitude conventional bombing role.



Flt Lt M Beetham, 50 Squadron, May 1944

Also, like the Canberras, they achieved some notable aviation records; in July 1959 a Valiant captained by Wing Commander Beetham (2nd World War Bomber Command veteran and future Chief of the Air Staff) carried out the first non-stop flight from the United Kingdom to Cape Town, 6,060 miles in 11 hours 28 minutes with air-to-air refuelling. The Valiants pioneered the jet tanker air-to-air refuelling role and were used in the bomber and reconnaissance roles until replaced by Victors and Vulcans in the front-line force from 1962 onwards.

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Victor

Comment from Mary AHB - Bomb drop to be inserted



Loading inert Yellow Sun Mk 2 during NATO exercise

The V-Force of Bomber Command became operational by mid-1955 and maintained the strategic nuclear deterrent until 30 June 1969 when the role was taken over by the Royal Navy's nuclear-powered submarines armed with Polaris nuclear missiles. At its peak in 1961 the V Force had 164 V-bombers in 17 squadrons. The original armament was a 10,000 lb bomb with an atomic warhead designed to fit exactly into the bomb bays of the aircraft. It was this type of bomb that was successfully tested in the first British A-bomb explosion at the Monte Bello Islands in October 1952. When thermonuclear weapons arrived in 1958, the Vulcans and Victors carried the Blue Steel stand-off missile, which could be launched from about 100 miles from the target and gave the bombers some protection from Russian defences.

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617 Squadron Vulcan carrying Blue Steel

The force could be dispersed over 36 airfields to give protection from surprise attack and maintained a quick reaction alert (QRA) that could get it airborne within 2½ minutes.



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The response was based on warning of an enemy attack provided by the ballistic missile early warning stations (BMEWS) at Thule in Greenland, Clear in Alaska and Fylingdales in Yorkshire, which became operational in 1964. Thus the V-bombers provided a British contribution, modest though it was, to the western nuclear deterrent which remained primarily manned bombers and Inter Continental Ballistic missiles of the USAF Strategic Air Command (SAC). Cooperation between the V-Force and SAC in training, exercises, plans and competitions became, and remained, very close.



RAF Fylingdales Domes and entrance 1963

THE ‘SANDYS’ STATEMENT ON DEFENCE 1957

The 1957 Statement on Defence cast a long shadow over the future of the RAF. While stressing the overriding importance of maintaining the nuclear deterrent as the only way to prevent war and reaffirming British military responsibilities throughout the world, it aimed at what it called ‘a comprehensive re-shaping of policy’. This meant taking into account both the country’s economic and financial strength - the cost in terms of men and resources devoted to defence in the previous years was said to be too high - and, above all, the scientific advances in weapons and missiles that must ‘fundamentally alter the whole basis of military planning’. The very strong, almost dogmatic, emphasis on missile forces was reflected in the plans for both the bomber and fighter forces of the future. The V-Force was to be ‘supplemented by ballistic rockets’. (The British-made long-range ballistic missile (LRBM), Blue Streak, had been under development since 1955 but until it became operational medium-range missiles would be supplied by the USA). The fighter force, responsible only for the defence of the V-Force bases since a more general task of air defence was thought impossible, was to be ‘in due course replaced by a ground-to-air guided missile system’. These basic assumptions, therefore, led to 2 crucial statements on research and development; firstly that ‘the Government

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have decided not to go on with the development of a supersonic manned bomber'; and, secondly, 'that the RAF are unlikely to have a requirement for fighter aircraft of types more advanced than the supersonic P.1 and work on such projects will stop'. The P.1 entered service as the Lightning, an aircraft capable of flying at Mach 2.



74 Squadron Lightnings over St Andrews

Both this radical new policy and its author, Mr Duncan Sandys, then Minister of Defence, have been called many things, very few of which are complimentary. The policy appeared to threaten the place of the manned aeroplane in the execution of air power, it tended to put all its eggs into one technological basket, and it initiated large reductions in the size of the armed forces. It was over-dogmatic in its assumption and took no account of the lessons of history - that air power is flexible if it is anything and that the flexibility must be exploited.

The policy was modified in succeeding years for several reasons; either the development of missile technology did not go according to plan, or development costs snow-balled, or political decisions over-rode the technology. Bomber Command operated the American Thor intermediate-range ballistic missiles (IRBM) from early 1959 until August 1963. The RAF Thor force - 20 squadrons each with 3 missiles - was manned by Bomber Command crews trained in the USA but the missiles remained under American control. The weakness of the Thor system was that it was static, above ground, and lacked the mobility that the V-Force had from its dispersed bases.

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Thor practice countdown

Blue Streak, although launched from underground, was similarly inflexible. Its development was abandoned in April 1960, having already cost £100 million, in favour of the American-built Skybolt air-launched missile. Skybolt was designed to have a range of 1,000 miles (the British Blue Steel designed for the Vulcans and Victors had a range of only 100 miles) and a joint US-UK development programme would allow it to be used by both the RAF and USAF. It was an ideal arrangement for the RAF; the life of the V-Force would be greatly extended at very little cost. Skybolt, however, never arrived. After major problems in development, the Americans cancelled the project in December 1962. Within 18 months, therefore, the RAF had lost its 2 future nuclear weapons, Blue Streak and Skybolt.



Skybolt

LOSS OF THE RAF STRATEGIC NUCLEAR DETERRENT

In place of Skybolt, the British Government agreed to accept the American Polaris missile (already proven) which would be launched from British-built nuclear-powered submarines. Thus the Royal Navy came to take over responsibility for the strategic nuclear deterrent, which it did from 30 June 1969, bringing to a close a chapter of RAF history. The strategic role of the aeroplane had been tied fundamentally to the independent mission and the independent organization of an air force. The creation of the Royal Air Force in 1918 was closely linked with the creation of the Independent Force soon afterwards. The doctrine of the independent strategic mission was the main, sometimes the only, case put forward for having an independent organization. With the strategic nuclear deterrent transferred to the Royal Navy, there were some who supposed that the Royal Air Force would no longer remain a third service, who felt that, without its independent role, it would wither and die. In fact there was no possibility that the absence of the strategic role could affect the independence of the RAF. What happened was that the employment of air power by the RAF came a full circle; the great operational strength of the RAF at its formation was in the tactical support of the British Army and the Royal Navy.

BEYOND THE V FORCE



90 Squadron Valiant tanks 56 Squadron Lightning

Until 1969 the V-Force continued to provide the strategic nuclear deterrent. To give the force a prolonged life, since there was no replacement aircraft contemplated, the Blue Steel stand-off missile was modified so that it could be released at low level and thus make the task of early warning much more difficult for the Russian air defences. The Victors were progressively converted to the tanker role, both for the Vulcans and the fighters, which brought increased flexibility to the employment of a much-reduced front-line strength. The tanker role of the Valiants and then Victors, in fact was one of the RAF operational successes of the 1960s-70s period. The Vulcans, in their low level role, were assigned to the long-range strike forces of NATO and eventually became fully integrated into the war organization of SACEUR (Supreme Allied Commander Europe).

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Refuelling from a Victor Tanker

NON NUCLEAR FORCE DEVELOPMENTS

MANPOWER & ORGANIZATION

While the creation of the V-Force dominated the 1950s, the period from the mid-1960s onwards was one of cuts in defence spending that radically altered the deployment, size and shape of the RAF.

At its peak post-1945 strength in 1952, total RAF manpower was over 270,000 of which about one third were National Servicemen: in 1962, with barely a trickle of National Servicemen remaining, it was 148,000; in 1968, when the first large scale changes were announced, it was 120,000; and in 1976, when the second major defence review had been completed and more cuts made, the RAF was only 90,000 strong (in total less than the number of officers in the USAF).

Changed commitments and concentration upon the role in Europe, together with the much reduced size of the RAF, led to a simplification of the Command structure. At the end of the Second World War in Europe, there were 10 RAF Commands at home: Bomber, Fighter, Coastal, Transport, Balloon, Flying Training, Technical Training, Signals, Maintenance and Reserve (later Home). Balloon Command disbanded in June 1945 and Home Command in 1959. By 1968 it was clear that the old organization of functional Commands, established after 1936 when the RAF was expanding, was no longer necessary. The major restructuring process began on 30 April 1968 when Bomber and Fighter Commands merged to form RAF Strike Command. Air offensive and air defensive elements were concentrated in No 1 and 11 Groups respectively. A year later Signals and Coastal Commands became No 90 (Signals) Group and No 18 (Maritime) Group respectively within Strike Command and then, as the Service continued to contract, Air Support Command (incorporating the old Transport Command) was integrated into Strike Command on 1 September 1972 to form one single multi-operational RAF command at home.

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Overseas, the Far East, Middle East and Near East Air Forces were disbanded as forces were withdrawn; this left only one overseas Command, RAF Germany. On the non-operational side, Flying Training and Technical Training Commands merged on 1 June 1968 to form Training Command. On 1 September 1973 the functions of Maintenance Command and No 90 Group (which had moved from Strike Command in 1972) were taken over by Support Command and on 13 June 1977, Training Command and Support Command themselves merged to form RAF Support Command.

NATO: THE RAF'S COMMITMENT



NATO

The decision to concentrate British military forces more than ever within the NATO Alliance recognized the changes in the political balance of power. It also re-emphasized what had been clear since the formation of NATO; the security of the United Kingdom - the first charge upon any government's defence policy - could only be achieved through a system of alliances. The NATO commitment meant changes, some of which were fundamental, in the deployment and roles of the Royal Navy and the Army, as well as the RAF.



Shackleton WB833 in flight

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The Royal Navy had to adjust to sharing its traditional tasks of maintaining shipping routes and blockading enemy waters with other Navies and, as its aircraft carriers were gradually phased out, found the roles of maritime strike and airborne early warning (AEW) being taken over by the RAF. Coastal Command thus had to work ever more closely with the Navy and within the NATO command structure; in 1953, therefore, NATO's East Atlantic (Eastlant) HQ arrived at Northwood to be located alongside the Coastal Command HQ, and in 1960 C-in-C Home Fleet (now C-in-C Fleet) also joined the combined HQ.

The joint task was to ensure the safety of sea communications in the Atlantic, North Sea and Home waters, the RAF's contribution to this was in the later 1950s and 1960s largely the responsibility of the Shackleton; this fine aircraft introduced in 1951 as the successor in the maritime role both to the Sunderland and to the Lancaster, from which it was descended, did sterling work right through until the early 1970s, and even then - when replaced by the Nimrod in the main anti-submarine and surveillance roles - a squadron was retained for airborne early warning.



Nimrod MR1

Like the Navy, the Army too found itself facing a new situation. In complete reversal of the previous 400 years of British military policy, which had been to avoid keeping troops on European soil, it now had a sizeable force permanently stationed in Europe in peacetime, and the RAF needed to be there in proportionate strength. Once the Berlin Blockade had demonstrated the nature of the threat from the East, it was clear that the RAF's deployment on the old Luftwaffe bases, many of them near the zonal boundary, made no military sense and, in the early 1950s, many of its squadrons were moved back to a group of newly-built airfields west of the Rhine, soon to be known as the 'clutch stations'. At the same time, the title British Air Forces of Occupation (BAFO) was changed to Second Tactical Air Force (2TAF).

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2 TAF

To ensure close co-operation between 2TAF and the British Army of the Rhine (BAOR), a new joint headquarters was constructed at Rheindahlen, near Moenchengladbach. The Second Tactical Air Force, later redesignated RAF Germany, had 2 main roles. Firstly, to defend the integrity of the airspace of the northern half of the Federal Republic and, with the United States and French Air Forces, to maintain access to Berlin in the 3 air corridors. Secondly, to provide the capability for conventional and nuclear strike/attack, reconnaissance and air defence for the immediate support of NATO land operations as part of the Second Allied Tactical Air Force. These tasks were undertaken initially with Canberras, Sabres and Hunters, all introduced in the early 1950s.



2 TAF Sabre, Hunter F6 with rockets 1958

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Javelin

NATO obligations also had their effect upon Fighter Command. The strictly limited role envisaged for the fighter force in the 1957 Statement on Defence, namely the defence of the V-Force bases, foreshadowed the end of an era. During the 1950s, equipped with the Hunter - one of its greatest aircraft - and with the all-weather Javelin, the Command continued to provide a defence for the whole of the United Kingdom. Fighter Command's squadron formation aerobatic teams flying Hunters- the Black Arrows of No III Squadron and the Blue Diamonds of 92 Squadron - bore witness to its technical excellence and its high morale.



92 Squadron aero team Diamond T Loop 1961

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However, with the arrival of the Bloodhound surface-to-air missile in 1958 and the contraction of the number of fighters and fighter airfields, the scene was set for the UK to become one of NATO's 4 air defence regions in 1960 and for the Command's air defence squadrons to be assigned to SACEUR in 1961.



Bloodhound surface-to-air missiles defending the East coast of Britain

Although the United Kingdom was declared one of the 4 air defence regions in NATO in 1960 and made subordinate to SACEUR in 1961, it was not until 1975 that a dedicated separate air defence command was set up in the UK, the United Kingdom Air Defence Region, (UKADR). This region was established because of the United Kingdom's strategic position. In the event of a (conventional) war with the Soviet Union, the United Kingdom would be in geographical terms of strategic importance in two ways; firstly in protecting and safeguarding supply routes into Europe from North America and secondly in its importance as a forward base for the United States in Europe. The UKADR was spread from the English Channel in the South to the Faeroes in the North and from the North Sea in the East to almost the middle of the Atlantic in the West.

The principal defensive components of the UKADR were early warning radars, surface to air missiles (SAM) and a long and short-range fighter component. The radar system was based on the United Kingdom Air Defence Ground Environment (UKADGE) that was part of the NATO Air Defence Ground Environment (NADGE). This comprised the long distance NADGE radar chain from Saxa Vord on the Shetland Island of Uist down to Hartland Point in Cornwall and the shorter-range tactical radar system on the eastern side of the United Kingdom from Buchan in the North to Neatishead in the South. The principal long-range surface to air missile component, the Bloodhound, was again based in a north-south line of the East Coast

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including the stations, Bawdsey, North Coates, Wyton, Barkston Heath, West Raynham and Wattisham. Point defence at RAF and USAF airfields was provided by the Rapier SAM. The USAF paid the British Government to deploy Rapier at their airfields in the east of England. In the 1970's and 1980's, the Lightning F6 at Binbrook and the F4 Phantoms at Leuchers, Conningsby and Wattisham were the fighter components of the UKADR. From the late 1970's onwards, Hawk trainers armed with Sidewinder missiles were to supplement the system in times of war and from 1988 onwards, the Tornado F3 came into service to replace the Lightning and then the Phantom in the air defence role.

Within this new NATO framework, the Command introduced the Lightning, armed with the Firestreak and later the Red Top air-to-air missile, further developed its control and reporting systems, perfected the techniques of air-to-air refuelling and - after its merger into Strike Command in 1968 - brought the Phantom into service as its main air defence interceptor. By the mid-1970s, virtually all the combat and combat support aircraft of the RAF were allocated to NATO.



19 Squadron Lightning XN787 carrying Firestreak, 19 Squadron Phantoms fly past King Ludwig's castle

RAF GERMANY 1960-1980

In order to help offset the very considerable cost of setting up the V-Force, 6 front-line squadrons were withdrawn from RAF Germany in 1961. The airfield at Jever was handed over to the re-formed Luftwaffe and the remaining 12 squadrons were now spread among Gutersloh and the 4 clutch airfields: Bruggen, Laarbruch, Wildenrath and Geilenkirchen.

The first RAF Germany helicopter squadron, 230 Squadron equipped with Whirlwinds, arrived at Gutersloh in January 1963 to give greater mobility to the forward units of BAOR. Two years later this Squadron redeployed to the Far East, and was replaced by 18 Squadron flying the more effective Wessex. Then in 1966 the Lightnings of 19 and 92 Squadrons replaced the obsolescent Javelins at Geilenkirchen. RAF Germany was

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thus now made up of 12 squadrons: 12 of Canberras in the nuclear role and 3 more for reconnaissance; 2 of Lightning interceptors; 2 of Hunter FR.10s; one of Wessex helicopters and, not included in the total but a very active component of the whole Command, the Communication squadron of 7 Pembrokes and a Valetta, based at Wildenrath.



Pembroke 60 Squadron RAFG May 83

During 1968 severe pressures on the defence budget forced the RAF to hand the substantial base at Geilenkirchen over to the Luftwaffe. Geilenkirchen later became the home of the NATO AEW component operating the E-3A. This led to the move of 19 Sqn's Lightnings to Gutersloh (92 Squadron had moved forward earlier to give this relatively short-range fighter a better endurance when reacting to air invasions from the east over the Inner German border) and the redeployment of 3 Sqn's Canberra B(I).8s to Laarbruch. After a short period of stability, the 2 Canberra units at Bruggen were withdrawn and replaced by Phantoms in 1970. Nos XV and 16 Sqs with Buccaneers deployed to Laarbruch in the nuclear role to replace the Canberras there and finally, Wildenrath received 4 and 20 Sqs with Harriers. By the end of 1972, RAF Germany was made up of 4 Phantom squadrons, 3 of Harriers, 2 of Buccaneers, 2 of Lightnings and one of the Wessex.

This extensive re-equipment programme was matched by other measures designed to improve the active and passive defence of the RAF Germany airfields and support facilities. A squadron of Bloodhound medium range surface-to air missiles, was deployed to cover Wildenrath, Bruggen and Laarbruch, while in the mid-1970s each of the 4 airfields in Germany received a squadron of the RAF Regiment equipped with Rapier short range air defence (SHORAD) missiles for close air defence.

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Rapier and Phantom



17 Squadron Jaguar over Mohne Dam

Between 1973 and 1976, Nos 14, 17 and 31 Squadrons at Bruggen exchanged their Phantoms for strike/attack Jaguars. They were then joined by 20 Squadron which had exchanged its Harriers for Jaguars. A fifth Phantom squadron, No 2 Squadron re-equipped with the reconnaissance version of the Jaguar at Laarbruch. Phantom interceptors replaced the Lightnings at Gutersloh, and because these aircraft had a far better range and endurance than the Lightning they were deployed back at Wildenrath. This in turn made it possible to move Nos 3 and 4 Squadron Harriers to where they should have been all along, on the forward base at Gutersloh alongside 18 Sqn's Wessex helicopters.



Harrier in hide RAF Germany 1983

COLD WAR – MARITIME AIR DIMENSION

As with other parts of the RAF, Coastal Command was swiftly run down at the end of the war. The Beaufighter maritime strike sqns were disbanded in 1947 leaving the Command with newly modified Lancaster GR Mk 3s and Sunderlands. However, only 4 years later the decision was taken to expand the Command to counter the emerging Soviet surface and sub-surface threat. The Shackleton Mk 1 was developed, from the Lincoln, to replace the Lancasters. However 4 sqns-worth of Lockheed P2V5 Neptunes were loaned by the US to cover the shortfall whilst the Shackleton was manufactured. So, by 1955 Coastal Command comprised 9 Shackleton, 4 Neptune and 2 Sunderland sqns, earmarked for use by SACLANT, plus the Whirlwind helicopter for SAR. By 1957 budgetary pressures had seen the force reduce to just the Shackleton sqns with reduced numbers of aircraft.

By 1960 the threat of Admiral Gorshkov's expanding 'blue water' Soviet Navy and the development of the nuclear submarine focused the Command on the North Atlantic and Norwegian Sea areas. The Shackleton sqns were now deployed with one at Ballykelly in Northern Ireland, 3 at Kinloss, one at the OCU at St Mawgan, and one at Gibraltar. 1969 saw Coastal Command disband to become 18 Gp in the new Strike Command. Also that year the RAF got back into the dedicated maritime attack role with the introduction of the Buccaneer Mk 2.

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208 Squadron Buccaneers in close formation August 1975

Equipped primarily with the Martel TV guided and anti-radar missiles, plus the WE177 nuclear bomb, 12 Squadron was based at Honington, which had been prepared for the, cancelled, F111. In 1979 the UK Buccaneer force transferred from 1 Gp to 18 Gp, a second maritime attack Squadron, No 216, was formed and the wing moved to RAF Lossiemouth. However, following an RAF Germany Buccaneer crash at Ex RED FLAG in 1980 the fleet was reduced and 216 Squadron disbanded. In 1993 No 208 Squadron moved to Lossiemouth and into the maritime role using Paveway Laser Guided Bombs (LGB) as its primary weapon. As the Soviet navy continued to increase in potency, and field long-range SAMs such as the SAN6, the need for a long-range anti-ship missile was identified. Thus the Sea Eagle missile, with over 60 nm range, was introduced to service on 208 Squadron in 1986 with 12 Squadron following 2 years later. In 1986 the aircraft also received an avionics update which included an improved Electronic Warfare (EW) suite and an inertial navigation system. In 1994 the Buccaneer was retired from service and the role, albeit very briefly, taken over by the Tornados of 12 and 617 Sqns. But throughout its life the Maritime Buccaneer Force worked closely with the Nimrod Force to develop co-operative tactics and later over-the-horizon targeting for the Sea Eagle missiles.

It was also recognized that the ageing Shackleton would be no match for the new Soviet submarines and in 1971 the Nimrod Mk 1, a development of the Comet airliner, entered service. With the new Seasearcher radar, which could display a profile of a ship to greatly enhance identification of targets, a passive EW system and new acoustic processors the Nimrod was a quantum leap in capability. Its jet engines gave it far greater speed, and hence more time on task, than other Maritime Patrol Aircraft (MPA) and it could carry depth charges, torpedoes, passive and active sonobuoys, and the American B57 Nuclear Depth Bomb. However, the cost of the aircraft, in a period of increasing pressure on the defence budget, meant that each Squadron had only 6 aircraft, although these were managed on a wing basis with centralized servicing (unlike the fast

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jet sqns). There were now 3 Sqns at Kinloss, one plus 236 OCU at St Mawgan and, until it disbanded in 1977, one at Luqa in Malta. The primary role of the Force was tracking, and if necessary destroying, Soviet nuclear submarines in the NORTHLANT area. The secondary role was surface unit surveillance and one aircraft was always on standby for SAR duties. Nimrods were used extensively for surface surveillance during the 2 'Cod Wars'; the fishing disputes with Iceland in the early 70s. A further 3 aircraft were produced as the R1 variant, based at Wyton in the electronic reconnaissance role. An 18 Gp station, Wyton also housed 360 Squadron, a joint RAF RN Canberra EW training Squadron and 2 Canberra target facilities sqns. These roles were later taken over by civilian contractors with just 100 Squadron remaining and re-equipping in 1984 with the Hawk.



Buccaneers and Phantoms in the Maritime roll

Other Groups contributed to the maritime role with a Victor and later a Vulcan Squadron of 1 Gp providing a maritime radar reconnaissance capability, but without any form of target identification except using Canberras or occasionally Buccaneers as visual 'probe' aircraft – this was held to be the ideal job for the junior crews on a Squadron! No 11 Gp provided Phantoms, and later Tornado F3s, of the SACLANT assigned Leuchars wing for air defence of the fleet when in the UK air defence region and occasionally as sweep or escort fighters for combined Nimrod and Buccaneer attack 'packages'. The 1 Gp tanker force was also tasked to support both the Nimrods and Buccaneers, essential when targets could be well north of northern Norway or deep in the South West Approaches to UK.

The Nimrod was updated to the Mk 2 version in the late 80s, partly in response to the lessons of the Falklands War and to the constant technological battle with the Soviets in terms of the development of weapons and sensors and counters to them, and could now also carry the Harpoon anti-shipping missile and the Stingray torpedo. The Force was again reduced, to 32 aircraft, with 42 Squadron at St Mawgan disbanding and the OCU moving to Kinloss. The Nimrod Force's contributions to the Falklands and 2 Gulf Wars are covered elsewhere but its peacetime tasks such as SAR, including scene of

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action command at the Piper Alpha disaster for example, continue as does the sea surveillance task which includes support to HM Customs and other tasks.

In the 90s there were more incremental, but significant, updates to the Nimrod's sensor, communications and navigation systems such that it is still a world leader in the ASW role but has much more flexibility. The MR4A variant will have the latest state-of-the-art systems and also an enhanced attack capability with, possibly, the ability to carry the Stormshadow land attack missile.

AIR DEFENCE OF THE UNITED KINGDOM

One of the principal concerns of No 11 Group of Strike Command during these years, apart from the possibility of heavy air attack across Denmark and the North Sea in the event of a major war in Europe, was the Soviet use of long-range reconnaissance aircraft to probe the northern reaches of United Kingdom airspace. By the mid 1960s, incursions by Tu-95 Bear aircraft had brought a new urgency to air defence capabilities, in particular the importance of RAF interceptors being able to turn away these intruders at ranges that would inhibit their intelligence-gathering activities. Soviet bombers based around the Kola Peninsula posed an even more potentially serious air threat. These aircraft had the capability to launch air-to-ground missiles against targets in the United Kingdom from hundreds of miles to the north and north-west of the British Isles. By 1988 the Soviet Union was operating Tu-160 Blackjack long-range supersonic strategic bombers designed to carry Kickback short-range cruise missiles. Since it was virtually impossible to intercept such bomber-launched missiles, it was essential to intercept the bombers at long range rather than attempt to shoot down the cruise missiles, the aim was to 'hit the archer not the arrow'.



A 23 Squadron Lightning intercepts a Russian Bear

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In the face of these potential threats, the front-line fighter strength of the RAF was increased to 76 aircraft in 1975.



Fighter controllers Buchan 1976

The 1979 Defence White Paper announced that work was under way on an improved UKADGE (United Kingdom Air Defence Ground Environment) network. This system organised the 11 radar sites that already existed, plus an additional one in south-west England, into 3 key sectors based on the major radar units at Boulmer, Buchan and Neatishead. The network also provided for a number of mobile radar sets to cover gaps in the radar screen. The nerve centre of the whole air defence network was located, together with the other operational functions of Strike Command, in a massive underground bunker at High Wycombe next to the bunker used in World War 2 by Bomber Command.



Type 84 Radar, Boulmer

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Finally, a force of air-to-air refuelling tankers sustained air defence interceptors on station at long range. In May 1984, the Victor tankers were augmented by the first of 9 VC-10K tankers on the re-formed No 101 Squadron at Brize Norton. Further surplus Super VC10s were bought from British Airways and Gulf Air in 1981 and, 1982, most were stripped for spares but 6 were kept available for possible later conversion to tankers.



101 Squadron VC10 tanking 2 Squadron GR1A Tornados

The need for extra airborne refuelling capability was convincingly confirmed during the 1982 Falklands Conflict. Consequently, it was decided to acquire 6 surplus Lockheed TriStars from British Airways, 4 for conversion to the dual tanker/passenger role (TriStar K Mk 1s), and 2 for modification to the tanker/freighter role (KC Mk 1s). Three more TriStars were later acquired from Pan Am for conversion whereupon the whole fleet was allocated to No 216 Squadron at Brize Norton. The tanker force was further augmented during 1982 by the modification of 6 Hercules to C Mk 1K standard.



Tristar conversion in progress, No 17 Hangar, Marshalls

THE TRANSPORT FORCE AND THE STRATEGIC RESERVE



Britannia wing over, Beverley on ground with troops July 1959, Belfast 364 in flight 1965, Comet C4 216 Squadron, Hastings in flight, Argosy of 114 Squadron Benson 1962 Tail chase, Hercules of 36 Squadron follow my leader

After the expansion period during the Korean War, the Government in the 1950s and early 1960s became increasingly conscious that the continued extensive overseas commitments placed a strain on Britain's manpower resources and foreign currency reserves. In order to reduce defence spending and cut the size of the armed forces (National Service ended in 1960), the number of overseas garrisons and the size of the remaining bases were reduced. The plan was that troops should be held in reserve in the UK (the Strategic Reserve) and then flown

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overseas when needed to reinforce the existing forces. The strategic and tactical air transport fleets of the RAF were therefore built up to provide the airlift - first the Comet IIs, Hastings, Beverleys, Britannias and Argosies, and then later the Comet IVs, Belfasts, Hercules and VC-10s. In the mid-1960s, strategic airlift began to be seen as the dominant role for the RAF at the time when the V-Force was coming to the end of its strategic deterrent responsibility. Transport Command was renamed Air Support Command in 1967, indicating the widening role of all forms of tactical and strategic support aircraft.

The capability of the transport force was demonstrated in one of the largest peacetime operations ever to be undertaken by British forces. Exercise 'Bersatu Padu' (Malay for 'complete unity'), in April-August 1970, was designed to show that Britain could reinforce the Far East theatre in fulfilment of her treaty obligations. Air Support Command VC-10s, Britannias, Hercules and Belfasts completed 4,500 flying hours between 4 and 22 April to deliver 2,800 troops, 1° million pounds of freight, 350 vehicles and 10 Wessex helicopters to Singapore at the start of the exercise. (In a further reinforcement phase, Phantoms supported by Victor tankers flew the 8,000 miles to Singapore non-stop in just over 14 hours.) The VC-10s, Britannias and Hercules continued to support the exercise until July-August when the troops, freight, vehicles and helicopters were returned to the UK in 109 sorties involving over 5,000 flying hours.

Problems occurred in the use of air transport to deploy the strategic reserve: Overflight rights of other countries were sometimes difficult to obtain and the combat effectiveness of troops suddenly thrust into a different climate was reduced. In addition, the Royal Navy was starting to operate the 'commando carrier' concept. Faced with an even more serious drain on foreign currency reserves and numerous balances of payments crises in the late 1960s, and the ravages of domestic inflation in the early 1970s, the Government decided that more drastic measures were necessary. At the peak of post-1945 expenditure on defence, 1952, defence spending was 11.8 % of the gross domestic product (GDP). In the 1960s the Government tried to stabilize the figure to around 7 - 7½%. In the 1970s, however, the figure was reduced to around 5½%. This was still higher than all other NATO allies, with the exception of the USA and, defence commitment demands were to be met without placing an intolerable strain on the UK's economy, fundamental reappraisals of overseas responsibilities, manpower and resources needed for defence were required. Consequently, a series of defence reviews affected the RAF in several ways: withdrawal from overseas commitments, equipment, manpower and organization.

AIRBORNE EARLY WARNING

The requirement for Airborne Early Warning (AEW) aircraft was highlighted on 7 December 1941 at Pearl Harbor. However, in Britain it was decided that the radar cover provided by the high and low level coastal chains in the UK provided more than

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enough warning of an attack and secondly, that ship borne radar gave sufficient protection for the Royal Navy. This changed with the realization that the new realities of jet powered aviation necessitated the need for a “far horizon” early warning system; the speed of jet powered aircraft severely compressed the warning time given to surface based radars, reducing the time available for a defensive response.

By the 1950's, the Royal Navy and RAF had started the development of AEW systems. The Royal Navy ordered the development of an AEW Fairey Gannet, whilst using the AN/APS 20 radar equipped Douglas Skyraider from the US as a stopgap, and the RAF set up the “Vanguard Flight”, also known as 1453 Flight, equipped with Lockheed P2V-5 Neptune's. They were not a success, and the flight was disbanded after 3 years. Therefore, the only operational AEW systems in use by the British armed forces up until 1970 were operated by the Royal Navy.



Shackleton AEW Mk2

With the cancellation of the large aircraft carrier project in 1965, the RAF was tasked to develop a long-range based AEW aircraft to cover the Fleet at sea and subsequently to supplement the ground based defence radar network of the United Kingdom Air Defence Ground Environment (UKADGE).

8 Squadron was equipped with 12 refurbished ex-maritime Shackletons designated AEW Mk 2 to fly in time from RAF Lossiemouth as part of 11 Gp. These aircraft were equipped with the AN/APS 20 radar taken from the Royal Navy's retiring Fairey Gannets and an improved navigation suite. Declared operational in 1972, the aircraft was a stopgap measure, due to be replaced within a decade. The aircrew mainly comprised ex-maritime Shackleton pilots, navigator plotters and air engineers, but the radar team comprised a mix of ex-Gannet Royal Navy observers and Royal Navy trained RAF navigators who operated the three 7" screen radar sets.

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The British Government, pressured partially by national interests and piqued by the slow progress being made by the NATO governments in purchasing the E-3A Airborne Early Warning and Central System (AWACS), decided to go it alone and procure the Nimrod AEW Mk 3 aircraft. Ordered in 1977, one year before the intended retirement date for the Shackleton AEW Mk 2, the aircraft was beset by development difficulties and the costs were continuously inflated over the length of the project.



AEW Shackleton navigation station.

With the replacement aircraft procurement delays, 8 Squadron was reduced in numbers from 12 Shackletons to 6 in the 1981 “John Knot” defence cuts and had to soldier on well past its intended retirement date with a radar designed almost 50 years before and an airframe constructed almost 40 years previously! Despite its age, the Shackleton filled an essential gap in the UK’s air defence and for most of its life maintained 2 hrs standby, throughout the year. During the Cold War on Operation CUETIP, the Shackleton was scrambled up to 5 times a week to detect Soviet aircraft entering the UKADR, usually through the Iceland Faroes gap. Crews controlled the fighter tanker combines then directed the fighters (in the early 70’s Lightnings then Phantoms) to intercept the hostile aircraft, often the Bear D which would usually turn away but on occasion continued to fly right down the North Sea or interrupt a major maritime exercise in the Atlantic.

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AEW Shackleton radar team and navigators

In addition to AEW and fighter control, the Squadron also conducted surface surveillance and tactical air support of maritime operations (TASMO) when the Shackleton practiced the vectoring of Buccaneers in low level anti-shipping attacks. All Shackletons carried a full set of search and rescue equipment with a Lindholme gear (dinghy with survival stores) in the bomb bay. At times, they filled the UK SAR commitment when the Nimrods couldn't, for example when cross winds prevented take-off.

The 1982 Falklands War highlighted the urgent requirement for an AEW platform to cover the Fleet when away from Britain's coastal waters. In 1986 the Nimrod project was cancelled as the Government decided to purchase the E3-D Sentry AWACS aircraft. The first of 7 RAF E-3Ds was delivered in February 1991 and 8 Squadron declared operational on 1 July 1992. As the E-3A had been in service with the United States Air Force (USAF) and with the NATO AEW Force at Geilenkirchen for a number of years, the aircraft was well proven. Moreover, the aircraft was undergoing a future development

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programme that would make its radar able to counter the stealthy design of modern fighters. Moreover, the incorporation of CFM 56 engines provided it with enhanced performance over the earlier variants. The effectiveness and ease of acceptance into service for the E3-D was proven just 2 weeks after being declared operational in the RAF, when it was deployed to support NATO Operation MARITIME MONITOR based in Trapani in Sicily.



Sentry and F3 by Fylingdales



3 members of the 9 man E-3D mission crew

This was the start of 10 years supporting operations over Kosovo in the Balkans with many sorties flown from Aviano in Italy. This era ended post-11 September 2001 when the Component found itself deployed to the Middle East to support operations in Afghanistan in Operation VERTAS. The crews had become used to operating from modern main operating base or hotel accommodation. This changed, as it did for many, with crews accommodated in the deserts stifling temperatures in 10 man tents with no air conditioning and basic field catering and ablutions.

THE TACTICAL ARM



1 Squadron Harrier fires

When Air Support Command was set up in August 1967, it inherited not only the strategic transport assets controlled by 46 Group but also the tactical transport and ground attack aircraft of 38 Group. Capability was upgraded in May 1969 when 6 Squadron's Phantoms joined the force, followed by 1 Squadron with Harriers 2 months later and finally 54 Squadron's Phantoms in September.

Further expansion of the tactical force took place in 1974 when 6, 54 and later 41 Squadrons re-equipped with Jaguars and deployed at Coltishall. One hundred and sixty-five single-seat and 35 x 2-seat Jaguar versions were eventually delivered to the RAF. Bruggen squadrons took delivery of the first of these aircraft to join RAF Germany, followed by 2 Squadron at Laarbruch in the tactical reconnaissance role.

Air Support Command was absorbed into Strike Command in September 1972; 46 Group was reformed to control the 115 aircraft of the tactical and strategic transport fleet, while 38 Group retained the 52 helicopters and the 60 offensive support aircraft. This arrangement lasted for 11 years, but in November 1983 38 Group was disbanded, its offensive support Jaguars and Harriers being transferred to 1 Group of Strike Command.

The arrival of the Harrier in service in July 1969 marked the start of a new era in RAF support operations. The Harrier originally carried twin 30mm Aden cannon in underbelly pods, together with a variety of external loads on 5 pylons, giving it a maximum war load of up to 5,000 lb. In practice, however, war load size had to be traded off against the demands of range and of short take-offs. Aircraft were therefore modified to GR1A standard with an uprated engine. Later Harrier GR3s had an even more powerful Pegasus engine, and were also fitted with Ferranti Laser Ranging and Target Marker Seeker equipment. Subsequently, Harrier squadrons received a US-designed variant known to the US Marine Corps as the AV-8B and to the RAF as the Harrier GR7.

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1 Squadron Harrier

EQUIPMENT

Notwithstanding the 1957 Sandy's Statement on Defence, the RAF entered the 1960s with the clear recognition that manned aircraft would remain essential for the successful performance of its many roles. Developments went ahead in 2 important areas: a replacement for the Canberra and the application of Vertical/Short Take Off and Landing (VSTOL) principles to a new range of fighter and transport aircraft. But in 1965 the financial cut-backs bit immediately into these projects. The TSR 2 (Tactical/Strike/Reconnaissance aircraft), which was to replace the Canberra and which had flown for the first time the previous year, was cancelled. The initial requirement had been extended as the airframe and engine technology showed that the TSR 2 could be a replacement for both the Canberra and the V-bomber. It came to be the most sophisticated weapon system the RAF on its own had ever contemplated, with a capability for high level supersonic flight and the ability to fly at 200 feet with terrain-following radar at just below the speed of sound. But from 1961 the development costs escalated dramatically; the costs of even a few aircraft were considered beyond what the economy could bear and demonstrated clearly that future new aircraft developments would have to be in cooperation with allies.

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TSR2

In place of TSR 2, 50 F-111 swing-wing strike aircraft were ordered from the USA, but 2 years later this plan was abandoned as part of further economies in defence spending. Eventually, the Buccaneer (originally designed for the Royal Navy for operations from carriers) came to the RAF as the Canberra replacement for low-level attack and reconnaissance over land and sea until the jointly developed British, German and Italian swing-wing Multi-Role Combat Aircraft (MRCA) came into service as the Tornado. By the mid-1980s, this new aircraft provided over half the combat strength of the RAF having replaced the Vulcan and Buccaneer in the nuclear strike role and the Phantom and Lightning in the air defence role - one aircraft for what were the old fighter and bomber forces. Spitfire and Lancaster in one airframe.

The P.1154 supersonic VSTOL fighter, and the HS681 VSTOL transport, which had been planned to support it, were also cancelled in 1965. Instead the RAF received the American Phantom with Rolls-Royce Spey engines, and the Lockheed medium range C-130 Hercules transport which replaced the Hastings and the Beverley.



Kestrel in flight West Raynham May 1965

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The subsonic P.1127 VSTOL fighter was not cancelled and was subsequently developed into the Harrier - a major success story for the RAF. When the Harrier entered squadron service in 1969, the RAF became the first air force in the world to operate a jet VSTOL fighter. (Since then the US Marine Corps has operated Harriers mainly in support of amphibious assault forces, and the Royal Navy and Spanish Navy have acquired sea-going Harriers.) In May 1969 an RAF Harrier, supported by Victor tankers, won its class in the London-New York sector of the Daily Mail Trans-Atlantic Air Race, operating out of a London station coal yard and into a pad near Manhattan's East River. RAF Harrier squadrons in Germany developed a concept of mobility for tactical air operations that would be impossible without the VSTOL capability. The first Buccaneer and Phantom squadrons also became operational in 1969. The subsequent arrival of the Nimrod (developed from the Comet) maritime patrol aircraft, thus gave the RAF, at long last, jets in the bomber, fighter, maritime and transport front-lines.



Harrier in Daily Mail Trans Atlantic race over Kings Cross coal yard, Nimrod breaks away after AAR 99

IMPROVEMENTS IN CAPABILITY

In December 1980, 230 Squadron flying the larger Puma HC Mk1s replaced 18 Squadron at Gutersloh. Early in 1983, having by then re-equipped with American-built Chinook HC Mk 1s, 18 Squadron returned to Gutersloh to complete the support force for No 1 (BR) Corps. The Puma/Chinook combination was a significant improvement over the capability of the original single Wessex helicopter unit.

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230 Squadron Puma Ireland, Chinook picks up pillow tanks



17 Squadron GR 1 Tornado Bruggen

An even greater improvement in operational capability was set in train when the first of the Tornado GR 1s for RAF Germany arrived on No XV Squadron at Laarbruch in 1983. They were joined subsequently by 16 Sqn's Tornados, followed by 20, 31, 17 and 14 Sqns at Bruggen between June 1984 and November 1985. By the end of 1985 the whole Jaguar force had been withdrawn. The seventh RAF Germany Tornado squadron, 9 Squadron, redeployed from Honington to Bruggen in October 1986, and 2 Squadron brought the GR 1A all-weather tactical reconnaissance Tornado into service at Laarbruch in August 1989.

However, these RAF Germany Tornados were not the first of the type to enter service with the RAF. At the end of January 1981 a Tri-national Tornado Training Establishment

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had been opened at Cottesmore, followed by the opening in January 1982 of the first all-RAF unit to fly the aircraft, the Tornado Weapons Conversion Unit at Honington. No 9 Squadron became the first operational unit to take delivery of the Tornado GR 1 strike/attack version that June, and by the end of 1982 both 9 and 617 Sqns were working up to full operational status as strike squadrons. 27 Squadron replaced 9 Squadron when it went to Germany, and 13 Squadron became the UK reconnaissance squadron at Honington in January 1990.

The first Tornado Air Defence Variants (ADV), the interim F2, were delivered to No 229 Operational Conversion Unit (OCU) at Coningsby in November 1984, later followed by 12 of the definitive F3s. In November 1987, 29 Squadron became the first front-line air defence unit to re-equip with the Tornado F3 and was declared to NATO that same month. Six more squadrons in the United Kingdom equipped with the Tornado F3 between May 1988 and early 1991. Designed to combat the bomber threat in an intense ECM environment, in all weathers and over a vast area of sky. The Tornado enjoyed a much better endurance than the Phantom and it carries a powerful look-down/shoot-down weapons system. The aircraft shares some of the outstanding navigation equipment carried by its GR.1 strike counterpart, but although capable in the long-range interceptor role for which it was developed, it lacks the agility of an air superiority fighter.



5 Squadron F3