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6 April 1988

CABINET

STATEMENT ON THE DEFENCE ESTIMATES

Memorandum by the Secretary of State for Defence

I attach the draft of my 1988 Statement on the Defence Estimates, which I propose to present to Parliament on Tuesday 17 May. It has been amended to take account of discussion at the Overseas Defence Committee meeting on 17 March.

2. The Statement records the decisive conclusion, in last year's General Election, of the domestic debate on Trident and reviews our security concerns in the wake of the INF Treaty. It reaffirms the need for an effective nuclear element in NATO strategy, which was dealt with in detail in SDE 87, and focuses particularly on conventional defence in Europe and Chemical Warfare, reflecting NATO's future arms control priorities.

3. Chapter 1 sets out our defence policy in the context of recent international developments, in particular, the INF Treaty and improved East-West relations. It records the reaffirmation by the NATO summit of the Alliance's deterrent policy and the decision to keep all NATO's forces, conventional and nuclear, up to date. Chapter 2 records the progress made in arms control and sets out NATO's priorities for the future. Chapter 3 describes the roles, activities and equipment of the armed forces. Chapter 4 reports on procurement policy, including our efforts to get better value for money through competition and collaboration with our allies. Chapter 5 deals with the management of defence resources, and repeats the warning of the last two years that difficult decisions will be required to match priorities to the resources available; but the commitment to maintaining our main defence roles is reaffirmed. Chapter 6 (Annex A in previous years) contains the usual analysis of the East-West military balance.

4. Four essays provide the now customary opportunity to discuss topical issues in greater depth. Three deal with aspects of conventional defence. "Soviet Military Doctrine" looks at Soviet strategy for the conduct of war in Europe and its implications for us. "The Forward Defence of Europe" describes this important element of NATO strategy for the first time fully in a White Paper. "The Conventional Balance" seeks to rebut those critics who claim that the Warsaw Pact's numerical advantage in conventional forces is offset by NATO's technological lead. The fourth essay "Procurement; Keeping up with the

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Times" describes the measures taken in recent years to achieve better value for money in equipping the armed forces.

5. As usual, the text also includes a number of boxes to highlight subjects of interest. And the printed version will incorporate a number of presentational improvements including colour photographs and an illustrated front cover.

6. I shall aim to remove the last remaining square brackets by the time Cabinet meets on 14 April.

7. I invite the Cabinet to agree to the publication of the 1988 Statement on the Defence Estimates

G Y

Ministry of Defence

6 April 1988

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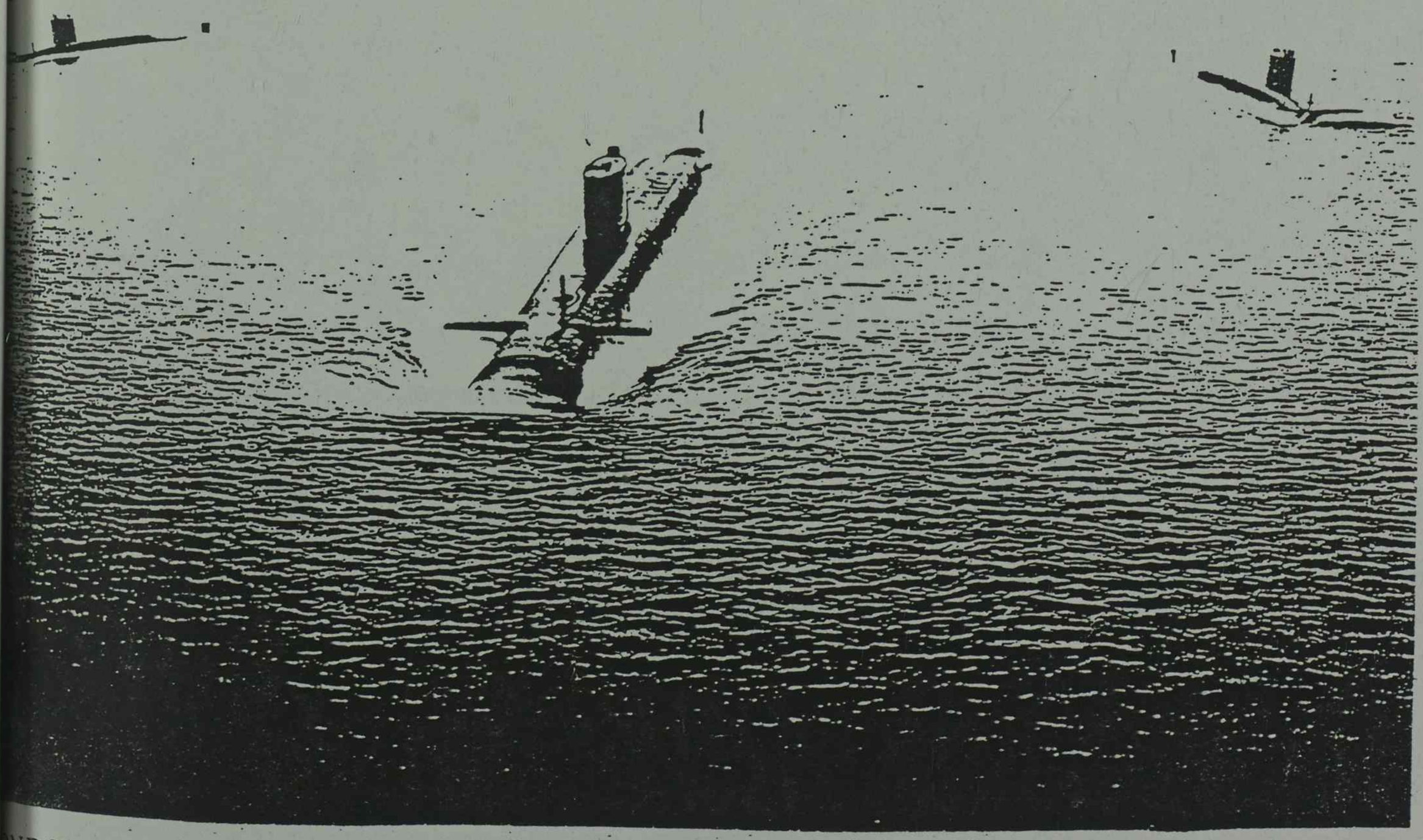
nted to Parliament by the Secretary of State for Defence by Command of Her Majesty 1988



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Front Cover: A rare view of HM Submarines Revenge, Repulse and Resolution in company. One Polaris submarine is always on patrol (at the time of this photograph, HMS Renown). Of the remainder, one is normally refitting, while the other two are either working up or carrying out independent exercises in preparation for patrol.

A fortuitous overlap in this cycle resulted in the opportunity for this photograph to be taken.

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The use of underlining below denotes material designed either to offer additional factual background or to indicate the Government's thinking on important general issues as a stimulus to debate. These passages are distinguished from the main text by their distinctive setting and typeface.

Diagrams

Photographs

Cover - HM Submarines Revenge, Repulse and Resolution.

1 - Soviet Tanks on Exercise on the North German Plain

2 - Soviet Tank Crew and British Observer at Soviet Exercise in the German Democratic Republic

3 - HMS Cornwall (Type 22 Batch 3 Frigate) Undergoing Trials

4 - Challenger Main Battle Tank

5 - Lynx helicopter with TOW

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7 - Exercise PURPLE WARRIOR: the Joint Force lands on the Shores of Loch Ryan

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12 - Infantryman in full CW protective kit.

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3 - Royal Air Force Equipment

4 - Major Exercises in 1987

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GLOSSARY

ABM	Anti-Ballistic Missile
ADP	Automatic Data Processing
ADV	Air Defence Variant
AEW	Airborne Early Warning
ALARM	Air-Launched Anti-Radar Missile
ALCM	Air-Launched Cruise Missile
AMF	Allied Command Europe Mobile Force
AOR	Auxiliary Oiler Replenishment Vessel
ARRV	Armoured Repair and Recovery Vehicle
ASROC	Anti-Submarine Rocket
ASM	Air-to-Surface Missile
ASW	Anti-Submarine Warfare
BAOR	British Army of the Rhine
CAPS	Conventional Armaments Planning System
CDE	Chemical Defence Establishment
CDI	Conventional Defence Improvements
CENTAG	Central Army Group
CNAD	Conference of National Armaments Directors
COBRA	Counter Battery Radar
CSCE	Conference on Security and Cooperation in Europe
CW	Chemical Warfare
DESO	Defence Export Services Organisation
DTE	Defence Technology Enterprises Ltd
ECM	Electronic Counter Measures
EH101	European Helicopter 101
EOD	Explosive Ordnance Disposal
ERB	Executive Responsibility Budget

EYE	European Year of the Environment
4ATAF	Fourth Allied Tactical Air Force
FPDA	Five Power Defence Arrangements
GLCM	Ground-Launched Cruise Missile
HSF	Home Service Force
ICBM	Intercontinental Ballistic Missile
IEPG	Independent European Programme Group
IGB	Inner German Border
INF	Intermediate Nuclear Forces
LAW 80	Light Anti-Tank Weapon for the 1980s
LRINF	Longer-Range Intermediate Nuclear Forces
LSL	Landing Ship Logistic
MBFR	Mutual and Balanced Force Reductions
MCMV	Mine Countermeasures Vessel
MDP	Ministry of Defence Police
MINIS	Management Information Service for Ministers
MLRS	Multiple-Launch Rocket System
MOD	Ministry of Defence
MOU	Memorandum of Understanding
MP	Maritime Patrol
NATO	North Atlantic Treaty Organisation
NFR 90	NATO Frigate for the 1990s
NHS	National Health Service
NORTHAG	Northern Army Group
PE	Procurement Executive
PRU	Photographic Reconnaissance Unit
QGE	Queen's Gurkha Engineers
RA	Royal Artillery
RAE	Royal Aircraft Establishment

RAF	Royal Air Force
RAFVR	Royal Air Force Volunteer Reserve
R Aux AF	Royal Auxiliary Air Force
R & D	Research and Development
RE	Royal Engineers
RFA	Royal Fleet Auxiliary
RM	Royal Marines
RNAD	Royal Naval Armament Depot
RNR	Royal Naval Reserve
RSRE	Royal Signals and Radar Establishment
RUC	Royal Ulster Constabulary
SACEUR	Supreme Allied Commander Europe
SA 80	Small Arms for the 1980s
SALT	Strategic Arms Limitation Talks
SAM	Surface-to-Air Missile
SAR	Search and Rescue
SDI	Strategic Defense Initiative
SDIPO	Strategic Defence Initiative Participation Office
SDMS	Support Defence Missile System
SLBM	Submarine-Launched Ballistic Missile
SLCM	Sea-Launched Cruise Missile
SRB	Staff Responsibility Budget
SRBM	Short-Range Surface-to-Surface Ballistic Missile
SRINF	Shorter-Range Intermediate Nuclear Forces
SSBN	Ballistic Missile Nuclear Submarine
STUFT	Ships Taken Up From Trade
SUBROC	Submarine Rocket
TA	Territorial Army
TOPMIS	Top Management Information System

TOW	Tube-Launched Optically-Tracked Wire-Guided
TRIGAT	Third Generation Anti-Tank Guided Weapon
2ATAF	Second Allied Tactical Air Force
UDR	Ulster Defence Regiment
UKADR	United Kingdom Air Defence Region
UKMF	United Kingdom Mobile Force
UN	United Nations
WEU	Western European Union

CHAPTER ONE: MAINTAINING SECURITY IN A CHANGING WORLD

THE DUAL APPROACH

101. The last year has seen continued improvement in the atmosphere of East-West relations and important achievements for NATO's strategy for peace. At the end of 1987, the two elements of the Alliance's balanced security policy - strength in defence and readiness for dialogue - brought about the first ever negotiated reduction in nuclear weapons. At their summit meeting in Brussels in March this year, NATO Heads of State and Government reaffirmed the validity of this dual approach, and reasserted the vital importance of the Alliance's strategy of deterrence, as the guarantee of our collective security. It was thus a successful year for NATO and for British defence policy, confirming our policies on the course that we and our allies must follow to maintain security in a changing world.

102. A year of unprecedented progress in arms control discussions between the United States and Soviet Union culminated in the signature, in December 1987 at the Washington summit between President Reagan and Mr Gorbachev, of the historic treaty eliminating US and Soviet ground-launched intermediate-range nuclear (INF) missiles. As the NATO summit agreed, this is a milestone in the Alliance's efforts to achieve a more secure peace, and the result of the political courage, realism and unity of its members. Soviet leaders were brought to the conference table because NATO deployed, in the face of much opposition, limited numbers of INF missile systems comparable to those already deployed by the Soviet Union. Unilateral gestures could never have achieved the same result. Indeed, had such gestures been made, we would face today the increased threat from Soviet missiles, with no countervailing force on the Western side.

103. The last year also saw the successful introduction of the confidence- and security-building measures agreed at the Stockholm Conference of 1986. And there was encouraging progress in other areas of arms control including, particularly, US-Soviet negotiations on strategic nuclear weapons, where there is now the prospect of agreement on a treaty reducing superpower armouries by 50%. Further details are given in Chapter 2.

'There is such a horror of war in the great nations who passed through Armageddon that any declaration or public speech against armaments, although it consisted only of platitudes and unrealities, has always been applauded; and any speech or assertion that set forth the blunt truth has been incontinently relegated to the category of 'war monger' .... The cause of disarmament will not be obtained by Mush, Slush and Gush. It will be advanced steadily by the harassing expense of fleets and armies, and by the growth in confidence in a long peace.'

Winston Churchill,
1932

Developments in the Soviet Union

104. We are now also at last beginning to see signs of change in the Soviet Union, reflected elsewhere in Eastern Europe. At home, Mr Gorbachev has set in train a series of wide-ranging reforms. Abroad, he has argued the need for 'new political thinking' in the nuclear and space age, and has laid stress on the growing interdependence of the countries of the world community. This 'new thinking' acknowledges that there is more to security than military might and that Soviet security cannot be maintained on terms that inevitably mean insecurity for others.

105. The British Government has welcomed the reforms that are taking place in the Soviet Union. More open internal policies, which bring the Soviet people more information about their own country and the world outside, are self-evidently desirable. And more pragmatic, less aggressive, external policies ought to make the Soviet Union a less uncomfortable neighbour. Certainly, as the Prime Minister's meeting with Mr Gorbachev at RAF Brize Norton in December 1987 again showed, we are now able to pursue our bilateral dealings with the Soviet Union in an atmosphere that is more open and constructive than before.

106. Although it would be imprudent to rely on a sustained change in Soviet attitudes, the prospect of its taking place is a challenge that the West must accept. The willingness of the present Soviet leadership to take part in the mutual concessions necessary to achieve an INF agreement is a good sign. But these are early days and we shall be looking for hard evidence, in the form of actions rather than words, that the 'new thinking' represents a genuine and lasting shift in Soviet policy towards the West, and not merely a new approach to the presentation and execution of old policies.

Progress in arms control has not yet been matched by comparable steps over issues such as [regional conflicts and] human rights, equally important for the creation of lasting confidence between East and West.

107. Nor has there been any let-up in the Soviet Union's military modernisation programmes, described in Chapter 6. By the mid-1990s virtually the entire Soviet strategic nuclear force in place in the mid-1980s will have been replaced by new or modernised systems. And the Soviet Union is continuing to modernise its theatre nuclear forces in Europe, where even after the INF Treaty is implemented it will continue to enjoy a huge numerical advantage; improvements include the introduction of more accurate shorter-range nuclear missiles and the deployment of more advanced nuclear-capable aircraft, which will soon carry new nuclear-capable stand-off missiles. The Soviet Union continues to enjoy very substantial advantages in conventional forces, and is updating them so effectively that in key areas, such as aircraft and armour, the West's technological lead is being eroded (see page [ ]). Soviet capabilities for chemical warfare (see page [ ]) far outstrip those of the West and cannot be justified by any comparable threat from NATO. These Soviet forces are all deployed and structured in such a way as to give them a capability for offence and surprise (see page [ ]).

108. There is no reason to believe that Soviet leaders want war in Europe. But the Soviet Union has not in the past been reluctant to exploit the threat or use of force to achieve its political ends. And its avowed aim of removing all nuclear weapons from Europe would expose the countries of Western Europe to the intimidating power of Soviet superiority in conventional and chemical forces, which could be used in attempts to impose Soviet will.

'Reflecting upon almost four decades of common endeavour and sacrifice and upon the results achieved, we are confident that the principles and purposes of our Alliance remain valid today and for the future. We are united in our efforts to ensure a world of more secure peace and greater freedom. We will meet the opportunities and challenges ahead with imagination and hope, as well as with firmness and vigilance. We owe no less to our peoples.'

The Declaration of the Heads of State and Government participating in the meeting of the North Atlantic Council, Brussels,
3 March 1988

The NATO Response

109. It was against this background that NATO leaders met in Brussels in March to take stock of the situation facing the Alliance and to set guidelines for future action. At that meeting they reaffirmed that:

- the link between the European and North American allies was vital to the security of each (see paragraph 112);

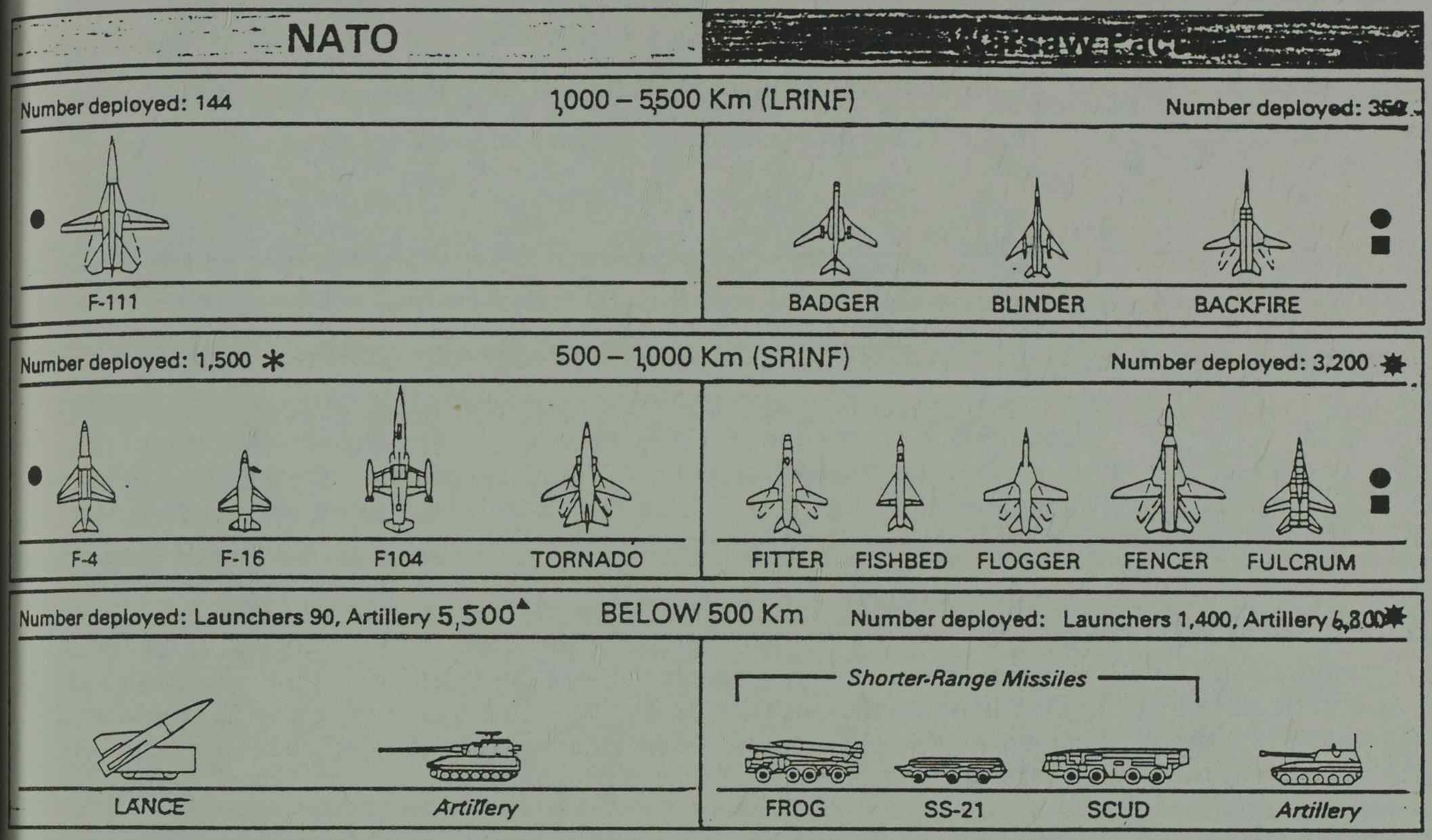
- NATO defences should remain strong, recognising the crucial role of the nuclear deterrence provided not just by the United States' strategic deterrent but also by the presence of effective and up-to-date nuclear weapons in Europe (see [below]);

- they were willing to seek dialogue with the countries of the Warsaw Pact and further arms control agreements (see Chapter 2), based on their confidence in a sure defence.

In particular, all the NATO leaders agreed that, for the forseeable future, there was no alternative to the Alliance's policy of deterrence based on an appropriate mix of adequate and effective nuclear and conventional forces, and expressed their resolve to keep them up to date where necessary.

110. NATO's deterrent policy is carried out through the strategy of forward defence (see page [ ]) and flexible response. Effective conventional forces will remain an important element in this strategy; but, however strong, they cannot achieve deterrence alone. So long as the West faces an adversary armed with nuclear weapons, it is self-evident that we must retain a similar capability to deter him from using or threatening to use them. More fundamentally, the need for the nuclear element in deterrence rests on the imperative to avoid any further war in Europe, conventional or otherwise; for even conventional weapons, of the power now available, would bring destruction on an unprecedented scale. The achievement of conventional parity would make an important contribution to enhancing international security. But even if an equal balance of conventional forces were to be reached, it could not be relied on to prevent aggression. History offers many examples of attacks launched against the odds; for example, when Hitler invaded the Soviet Union in 1941 his forces were substantially outnumbered. For the foreseeable future, only nuclear weapons will be able to confront a potential aggressor with risks so unacceptable that aggression is no longer a rational option.

Fig 1 - Land-Based Theatre Nuclear Systems Remaining in Europe after Implementation of the INF Treaty ♦



♦ – French systems are not included. They comprise about 80 Mirage IIIE and Jaguar aircraft and 30 Pluton short-range missiles.
● – All capable of delivering tactical nuclear bombs.
✸ – Total Aircraft and Artillery, numbers assigned nuclear role not known.
■ – Air-To-Surface Missiles available for use.
* – Of which 700 are assigned a nuclear role.
▲ – Of which 2,500 are certified for nuclear use.

111. This reality is recognised in the arms control priorities endorsed at the NATO summit, and in particular in the reaffirmation by NATO leaders that further reductions in nuclear weapons, after the reduction in US and Soviet strategic arms now under negotiation, would come about only in conjunction with the establishment of conventional balance and the global elimination of chemical weapons.

NUCLEAR FORCES IN EUROPE

1. The INF Agreement will remove NATO's Pershing II and ground-launched cruise missiles, but will not affect the validity or credibility of the strategy of flexible response. Even after the agreement is implemented, substantial numbers of nuclear-capable delivery systems will still be assigned to NATO's Supreme Allied Commander Europe (SACEUR).

2. These remaining systems will have to be structured effectively to ensure that they remain a balanced and survivable force. There will also continue to be a need, articulated in the decisions of the NATO Nuclear Planning Group meeting in Montebello in 1983 and reaffirmed at the NATO summit in March 1988, to keep these forces up to date, so that the West can maintain deterrence with the minimum number of warheads.

3. There is nothing new in all this; it circumvents neither the letter nor the spirit of the INF Agreement - a fact clearly recognised by the Soviet Union in its own modernisation programme (see Chapter 6); nor is it inconsistent with reducing the number of nuclear weapons in Europe, which is already 2,400 less than in 1979. It is rather part of the normal, continuing process of review and, if necessary, adjustment to ensure that NATO's forces remain effective and credible. As in the past the United Kingdom will play its full part in this process.

[Figure 1 will appear here]

THE EUROPEAN PILLAR

112. A strong and stable partnership between the two sides of the Atlantic, resting on shared values and interests, lies at the heart of our security. As we explained in last year's Statement, neither North America nor Western Europe could carry the full burden alone. The presence in Europe of the conventional and nuclear forces of the United States plays an irreplaceable part in the defence of Europe and provides the essential linkage with the US strategic deterrent. Conversely the credibility of Allied defence cannot be maintained without a major European contribution.

113. That European contribution is substantial. The defence expenditure of European NATO countries has steadily increased, and is now around one-third higher in real terms than it was in the early 1970s, enabling Europe to improve the quality of its forces. The European nations provide some 90% of the manpower, 85% of the tanks, 95% of the artillery, and 80% of the combat aircraft stationed in Europe, as well as 70% of the major warships readily available in the event of a conflict. European standing forces currently comprise over 3.5 million men and women, compared with US forces totalling 350,000 in Europe and 2.3 million worldwide. The active duty reserves of the European countries total 3.2 million men, compared with a US total of 1.7 million. Europe's aim is to make better use of the substantial resources it already devotes to the Alliance by more effective cooperation in defence and security matters; a more cohesive European effort can make a greater contribution to the Alliance than the sum total of our individual national efforts.

114. There has been extensive activity in the field of European security cooperation during the last year. The potential of the revitalised **Western European Union** (WEU) was demonstrated by a series of meetings, under its auspices, which helped to concert contributions by member states to mine-clearance operations in the Gulf (see page [ ]). Although it has no role in either operational deployments or force planning, the WEU can provide a valuable forum for coordinating policy on such out-of-area issues.

115. The WEU also met twice in 1987 at Ministerial level, in Luxembourg in April and in The Hague in October. These opportunities for both Defence and Foreign Ministers jointly to discuss European security issues are a unique feature of the WEU. The meeting in October was marked by the publication of the Platform on European Security Interests, which set out how the seven member states intend to contribute to NATO's future security. It included their commitment to maintain credible and effective deterrence, based on both nuclear and conventional defences, and to pursue an active arms control policy aimed at enhancing security and fostering stability and cooperation in the whole of Europe. The platform will provide a basis for the development of the WEU as a forum for harmonising Western Europe's defence effort in support of the Alliance. The United Kingdom will continue to contribute constructively to this work when we take on the Presidency of the WEU in July this year.

'We are each determined to carry our share of the common defence in both the conventional and the nuclear field, in accordance with the principles of risk- and burden-sharing, which are fundamental to allied cohesion..... We remain determined to pursue European integration including security and defence and to make a more effective contribution to the common defence of the West.'

The Common Platform on European Security Interests,
WEU Ministerial Council,
27 October 1987.

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116. The two meetings of **Eurogroup** Ministers in 1987 provided an opportunity for informal discussion of defence planning issues from a European perspective. The progress of the **Independent European Programme Group** (IEPG) in pursuing European armaments cooperation is described in paragraphs 408-411.

117. The European allies continue to strengthen their already close bilateral defence relations. At the Anglo-French summit in January 1988 a number of proposals for greater bilateral military cooperation were discussed, their purpose being to strengthen the collective defence arrangements of the Alliance. These include the further development of existing plans for wartime reinforcement that involve the use of French facilities, and the scope for closer French involvement in the forward defence of the Federal Republic of Germany. In addition, we have reached agreement with France on defence of the Channel fixed link, and set up arrangements for obtaining better value for money in procurement (see paragraph 415). The Government welcomes bilateral arrangements that contribute to the collective defence of NATO, and will continue to seek such opportunities wherever they arise.

BRITISH DEFENCE POLICY

118. British defence policy remains founded on membership of NATO. We cannot ensure our security other than through the collective strength of the Alliance. Last year the British electorate again endorsed NATO's policy of deterrence based on a mix of nuclear and conventional weapons, and decisively settled the debate about the maintenance of an independent British strategic deterrent. The Trident programme remains on course to provide the necessary updating of that capability from the mid-1990s (see page [ ]).

119. Chapter 5 gives details of our defence budget, which, at £19,215 million in 1988-89, is among the highest in NATO whether measured in absolute terms, as a percentage of gross domestic product or per capita. Chapter 3 describes how this money is spent by our armed forces. Over 95% of the defence budget goes, directly or indirectly, towards carrying out our main defence roles in NATO (see paragraph 302). The great majority of our forces are committed to one or other of the three main NATO commands, Europe, Atlantic and Channel; and we remain the only European member of the Alliance to contribute to all three elements of NATO's triad of forces: strategic nuclear, theatre nuclear and conventional.

120. We also have important defence commitments outside the NATO area, described in paragraphs 326-330. They include a direct responsibility for the defence of our remaining dependent territories. They also include activities such as the protection of our merchant shipping in the Gulf, military assistance to foreign and Commonwealth countries and contributions to international peace-keeping, which help to achieve the Government's foreign policy aim of promoting stability in areas where we have important economic interests. And since our interests coincide closely with those of our allies, these efforts make an important contribution to preserving broader Western interests outside the NATO area. As Figure 13 shows, the cost of these activities is small compared with the benefits they bring. And in a period of tension or war in Europe, the men and equipment concerned could be redeployed on NATO tasks.

121. The considerably increased sums allocated to the defence budget since 1979 have enabled us to set in hand substantial enhancements to our conventional forces (see page[ ]), the benefits of which are now beginning to be seen and will continue to be felt well into the 1990s. At the same time, we are pressing on with our efforts to achieve the best possible value for money in the management of defence resources (see Chapter 5), and in the procurement of equipment for the armed forces (see Chapter 4 and page [ ]).

122. There can be no doubt about the Government's determination to take the measures necessary for our national defence. We have charted a clear and consistent course for the past nine years. The task now is to move ahead steadily on that course, benefiting from the considerable progress that we have already made.

ESSAY

SOVIET MILITARY DOCTRINE

'Military doctrine: a system of views, adopted in a country at a given time, on the nature, aims and character of a possible future war, on the preparation of the country and its armed forces for it, and on the methods of waging it.'

Soviet Military Encyclopaedic Dictionary 1986, page 240.

1. Successive Statements on the Defence Estimates have described NATO strategy in its various aspects. This essay looks at the other side of the coin, at the equivalent Soviet thinking, which differs fundamentally from our own.

2. In the West, the concept of strategy, as a plan of action for the conduct of war, has a long and distinguished history. We have not, however, developed any universally applicable theoretical structure for the organised study of war. In the West the term 'military doctrine', if it is used at all, generally means tactical principles and regulations, a set of guidelines for the tactical commander, or a list of principles to stimulate original and creative thought. In contrast, the Soviet concept of military doctrine, as the above definition makes clear, is both systematic and markedly more comprehensive in its scope.

3. Soviet military doctrine provides a strict theoretical model, which is universally applied throughout the Warsaw Pact as the military element of Marxist-Leninist doctrine. The same principles of war, of operations and tactics, are understood by all military arms and services, by weapons designers and research staff and by Communist Party officials. And the doctrine is not just applicable on the battlefield. It encompasses the whole spectrum of the state's planning for war, including the preparation of the population, the organisation of the economy and the principles of foreign policy (including arms control negotiations).

4. Soviet operational art, ie that part of doctrine that deals with the conduct of operations on the battlefield, has its roots in a long-standing tradition of defending the homeland by taking the offensive. Hitler's invasion of the Soviet Union was defeated by a war of rapid manoeuvre in which, in successive battles, Soviet forces were concentrated in mass to break through German lines at their weakest points and to encircle and destroy the enemy.

5. Soviet concepts for the use of their armed forces in a war with NATO have inevitably changed over the last 40 years. Under Stalin, such a conflict was visualised largely as a rerun of the Second World War, with protracted land campaigns in which ground forces and conventional weapons would predominate; nuclear weapons, as they became available, were seen as no more than an extension of traditional artillery and aerial bombardment. Khrushchev, however, believed that the development of strategic nuclear missiles meant that nuclear weapons could be decisive in their own right, and that conventional forces would be required mainly to exploit their success and occupy territory. Then in the mid-1960s - concurrently with, and perhaps partly in response to, NATO's evolving strategy of flexible response - it came to be accepted that there might be an initial conventional phase to any future war, and that NATO's resistance would be maintained even in the nuclear phase. This resulted in a renewed emphasis on the need for conventional forces, and the heavy Soviet investment in recent years in developing an ability to wage a successful war in Europe without necessarily having recourse to nuclear weapons.

6. There has recently been further debate in the Soviet Union about the conduct of any war with NATO. For example, statements by Soviet strategists have played down the long-held concept that the Socialist countries could only be defended against an aggressive NATO by adopting an operationally offensive posture; but their statements do not suggest that their belief in the need to possess such a capability has yet been abandoned. This offensive capability continues to be reflected in the operational art and structure of Warsaw Pact forces today. And it explains why they have seen a need for large preponderances over NATO in conventional weaponry, especially in offensive systems such as tanks and mobile artillery (see Chapter 6).

7. Soviet thinking on operational art stresses five aspects in particular:

- **Surprise and deception.** Operationally, surprise is seen as necessary to deceive the Alliance as to the timing of the blow; the scale, scope and axis of the offensive; and, if possible, the weaponry and techniques that will be used. Surprise, by conferring the initiative and pre-empting the establishment of a stable defence, is seen as a force multiplier enabling the Warsaw Pact to impose its style of war-fighting on the enemy.

- **Speed.** Exploiting surprise, the Warsaw Pact would intend to advance at high speed (averaging 40km to 60km a day), disrupting and fragmenting the defence. By moving more swiftly than NATO could gather intelligence, take decisions and act on them, it would aim to prevent the Alliance from making

timely and effective counter-moves. A rapid advance would be planned so as to reduce the danger of NATO resorting to nuclear weapons, by curtailing decision-making time, disrupting command and control, and making targeting difficult because of the intermingling of friendly and enemy forces. A rapid advance would also be expected to induce psychological and political collapse in some members of the Alliance.

. **Concentration.** With surprise achieved, the Warsaw Pact would not expect to need a large overall superiority to secure its strategic objectives. This is because it would aim to exploit its possession of the initiative to concentrate considerable local superiority (in a ratio of, perhaps, four or five to one) against vulnerable sectors, thereby achieving a rapid break-through and generating operational momentum.

. **Deep operation.** The Warsaw Pact would aim to attack throughout NATO's operational depth, the aim being to bring about a simultaneous collapse of front and rear, so as to enable NATO's stronger groupings to be encircled and destroyed. Thus, while the main forces advanced westwards, air and conventional missile attacks, special purpose forces, air- and sea-delivered troops and operational manoeuvre groups would attempt to erode the defence from the flanks and behind by disrupting NATO's nuclear capability, command and control facilities , reinforcements and logistics.

. **Air Superiority.** A large proportion of NATO's nuclear weapons is air-delivered (and this proportion will increase when the INF Treaty is implemented). Soviet doctrine therefore envisages, as a first priority task for all arms, the conduct of an offensive air operation, coincident with the ground forces' offensive, aimed at neutralizing NATO's theatre nuclear capability in Europe within the first few days of a conflict. This air operation would require the achievement of a measure of air superiority by attacks on NATO's nuclear-associated and air defence airfields, surface-to-air missile units and command and control facilities.

8. Warsaw Pact strategy, organisation and equipment are designed to prosecute operations at the conventional level. But the Soviet Union also continues to maintain and improve its nuclear weapons and associated delivery systems, thereby ensuring a continued ability to launch retaliatory or pre-emptive strikes at all levels, should circumstances so demand. Together with nuclear weapons, chemical weapons (see page [ ]) are classed by the Soviet Union as 'weapons of mass destruction', but they could be

used separately from, and possibly in advance of, nuclear release. Even in peacetime the Soviet Union has over 30,000 specialised vehicles and over 70,000 personnel in the armed forces specially equipped and trained for operations in a contaminated environment.

9. The essentially defensive purpose of these offensive tactics has long been stated in Soviet military doctrine. Soviet and Warsaw Pact leaders have stressed the same point; and, as we note in Chapter 1, Soviet leaders now acknowledge that their security cannot be maintained on terms that inevitably mean insecurity for others. There is no reason to believe that they intend to start a war against Western Europe. Nonetheless, the effect of the doctrine has been to create in Eastern Europe a force that remains structured, equipped and trained for offence and surprise. The Warsaw Pact thus has a capability that could be used for aggressive purposes if Soviet intentions should change, without the necessity for any action to be taken that might signal such a change.

10. This Warsaw Pact offensive capability lies at the root of NATO's concerns for the security of Western Europe. Hopes that the Warsaw Pact approach might change have been encouraged by statements of the Pact's political leadership. For example, when Pact leaders met in Berlin on 28-29 May 1987, they spoke of an arms control process leading to reductions of conventional forces and the elimination of disparities in Europe to a level at which both sides would be able to ensure their security, while neither would have the means to mount a surprise attack on, or conduct offensive operations against, the other. And similar thinking has been reflected in more recent statements by Soviet leaders. This apparent wish to reach an agreement on conventional forces in Europe is welcome. But the simultaneous assertion by the Warsaw Pact that a broad parity in total capability exists must be measured against the imbalance of forces in favour of the Warsaw Pact described in Chapter 6. The redress of imbalances in conventional forces will be the major NATO aim when the new negotiations on conventional stability in Europe begin (see paragraphs 212 to 215).

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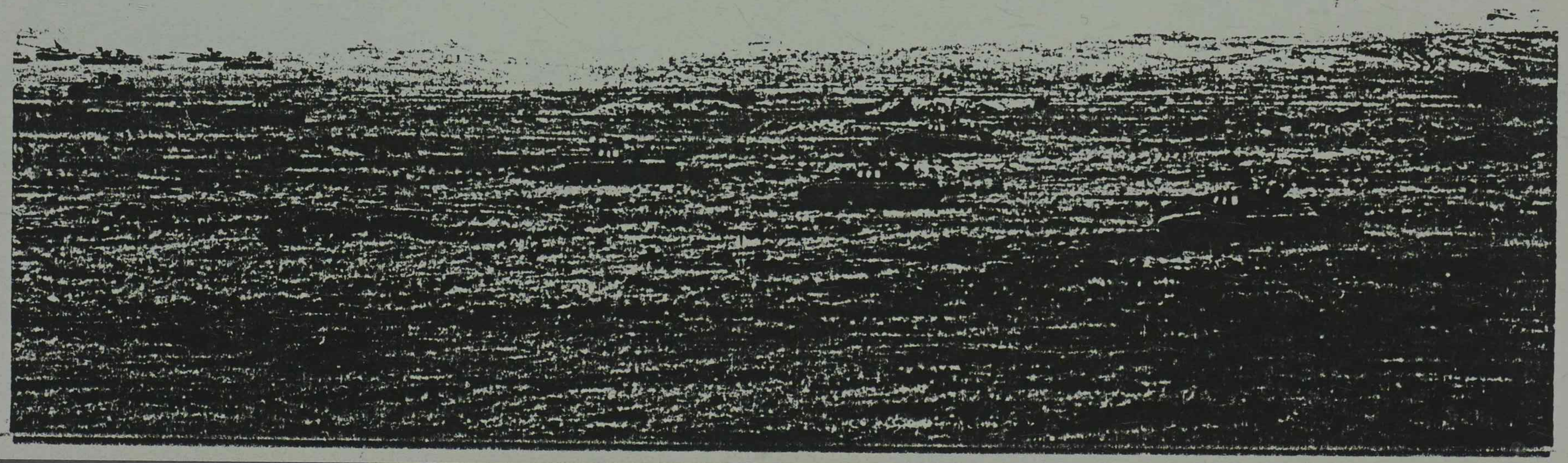
1 - Soviet Tanks on Exercise on the North German Plain



CHAPTER TWO: ARMS CONTROL

201. The INF Treaty signed in December was the arms control highlight of 1987. But progress was also made towards the other arms control priorities endorsed by NATO Ministers at Reykjavik in June 1987 and reaffirmed by NATO leaders at their summit meeting in March 1988 (see paragraph 221). This chapter records the progress made and discusses the Alliance's aims for the future.

NUCLEAR ARMS CONTROL

Intermediate Nuclear Forces

202. An INF agreement has long been a NATO priority. The treaty, which is subject to ratification, provides for the elimination of all US and Soviet ground-launched missiles with a range between 500 km and 5,500 km. To that end it requires the Soviet Union to destroy deployed systems capable of carrying some 1,700 nuclear warheads compared with about 400 on the US side, ending a huge asymmetry in favour of the Soviet Union. It also involves highly intrusive verification measures. In both respects the agreement is a major advance, and sets a good precedent for further arms control agreements that can enhance stability and security.

203. The agreement is between the United States and the Soviet Union, and involves only their systems. But the United States has fully consulted its NATO allies at all stages and on all important matters. The United Kingdom has played an active and prominent role in these consultations; and, as one of the five European countries in which US systems are based, is directly involved in the implementation of the treaty. An Exchange of Notes between the United Kingdom and the Soviet Union, and a Basing Country Agreement between ourselves and the United States, both signed in December 1987, set out the terms and procedures for verification inspections by Soviet representatives at the two bases in the United Kingdom involved in the arrangements: RAF Greenham Common and RAF Molesworth. These bases will be subject to Soviet inspection for 13 years after the agreement enters into force to establish that the cruise missile capability is eliminated, and is not surreptitiously resurrected. The United States will have similar rights in the Soviet Union and in Eastern European countries where relevant Soviet missiles have been based. The history of the negotiations, and details of the treaty's implementation, are described below.

INF: THE MAKING OF A TREATY .....

1. In the late 1970s, NATO faced an increasing disadvantage in theatre nuclear weapons. The Soviet Union was rapidly deploying new and capable systems -particularly the SS-20 missile, which could hit all Western Europe from sites deep in the Soviet Union. At the same time, NATO's longer-range INF (LRINF) systems were ageing and becoming increasingly vulnerable.

2. NATO saw a danger that the Soviet Union might come to believe that its long-range theatre forces could be used to threaten Western Europe, without a credible means of Alliance response. This could have put at risk a central tenet of NATO strategy - the need to possess an appropriate range of credible deterrent options. The challenge was to the political as much as the military strength of the Alliance.

3. In late 1979, therefore, NATO responded by deciding to deploy Pershing II and ground-launched cruise missiles (GLCMs), while at the same time making clear its willingness to negotiate limitations on this class of missile. In 1981, this concept was embodied in the Alliance's so-called zero option, which involved elimination of the SS-20s, Pershing IIs, GLCMs, and all other Soviet and US ground-launched missiles with a similar range, together with provisions to prevent circumvention by deployment of shorter-range missiles. The Soviet Union replied with a proposal whose effect would have been to block NATO deployments and preserve a Soviet monopoly of INF missiles.

4. The negotiations became stalled on variations of these basic positions, and the United States, in 1983, formally proposed an interim solution, involving parity in the missile warheads of the two sides, as a step towards the zero solution. This failed to achieve the necessary progress; the Soviet Union continued to argue, on the basis of specious comparison of figures, that parity in systems already existed, that US INF deployments should be cancelled, and that British and French strategic systems should be included in any agreement. In November 1983, the Soviet Union broke off negotiations in an attempt to force the West to cancel its INF deployments.

6. Negotiations were eventually resumed in 1985; and at the summit meeting that November the United States and the Soviet Union agreed to work for an interim INF agreement. 1986 saw progress on several elements of such an agreement; and when President Reagan and Mr Gorbachev met at Reykjavik in October the two sides moved closer to an understanding based on the elimination of all systems in Europe and a ceiling of 100 warheads elsewhere. The Soviet Union accepted that neither British nor French strategic systems would be involved; that shorter-range INF(SRINF) missiles should be part of the deal; and that specific and intrusive verification measures would have to be worked out. But the Soviet Union also insisted on linking INF to other areas of arms control, notably to constraints on the US Strategic Defense Initiative (SDI) programme.

7. 1987 saw further progress. The Soviet Union dropped the linkage issue in February; and in March the United States tabled a draft treaty embodying the progress made at Reykjavik, including the need for constraints on specified shorter-range systems. In April, Mr Gobachev responded by proposing elimination of SRINF missiles in Europe. NATO Ministers welcomed this move in June, when they advocated the global elimination of both LRINF and SRINF missiles - the so-called global double zero option. This was accepted by Mr Gorbachev in July; and, after further discussion about the treatment of Federal German Pershing IA missiles with US-owned warheads, and about verification and phasing, the agreement was signed on 8 December.

8. The final INF Agreement is very similar to the proposal set out by NATO in late 1981: it provides for equality between the United States and the Soviet Union through

asymmetrical reductions, addresses only the systems of the two countries, is global in scope, prevents circumvention by shorter-range systems, and involves stringent verification. This continuity of approach contradicts Soviet claims that it is Soviet initiatives that have dominated the arms control agenda. The INF Agreement is a success for a consistent and firm Western policy, in which clear arms control goals and force deployments have been pursued together.

..... AND ITS IMPLEMENTATION

1. The treaty will come into effect on the exchange of instruments of ratification by the United States and the Soviet Union. It provides for the elimination of missiles and launchers as well as certain support facilities and structures, and for the verification measures necessary to monitor compliance. The elimination process will be managed in stages over a three-year period: SRINF elimination in the first 18 months; LRINF in two phases, in which each side will reduce to 200 warheads in 29 months, and then proceed to zero.

2. In the United Kingdom these provisions will affect RAF Greenham Common, where there are 96 operational US GLCMs, and RAF Molesworth, where there are 16. In addition, there are some spare missile bodies at each base. We expect that RAF Molesworth will be deactivated, and all the missiles removed, early in the elimination process. Reductions will also occur in the first phase at RAF Greenham Common, but some missiles are likely to remain there until near the end of the three-year period. Training deployments will therefore continue, as necessary, within the agreed deployment areas established by the treaty. Missiles will be removed to a designated facility in the United States for destruction. There is no obligation to destroy the permanent support structures at the two sites.

3. The United States is responsible for its compliance with the treaty. But the United Kingdom is involved fully in the verification arrangements in this country through the agreements, described in paragraph 203, governing Soviet inspection activities. Soviet inspectors will be able to inspect the two GLCM facilities to monitor compliance with the treaty (see page [ ]). Inspection teams will consist of up to ten inspectors, drawn from a list acceptable to the British Government. Inspections could last for up to 90 hours from entry into the United Kingdom to departure. The inspectors will be escorted at all times by both British and US personnel, and they will be liable to expulsion by the British Government if they breach agreed terms. The United Kingdom welcomes these arrangements, which apply reciprocally to US inspections in the Soviet Union and Eastern European basing countries, as a necessary part of an effective verification system.

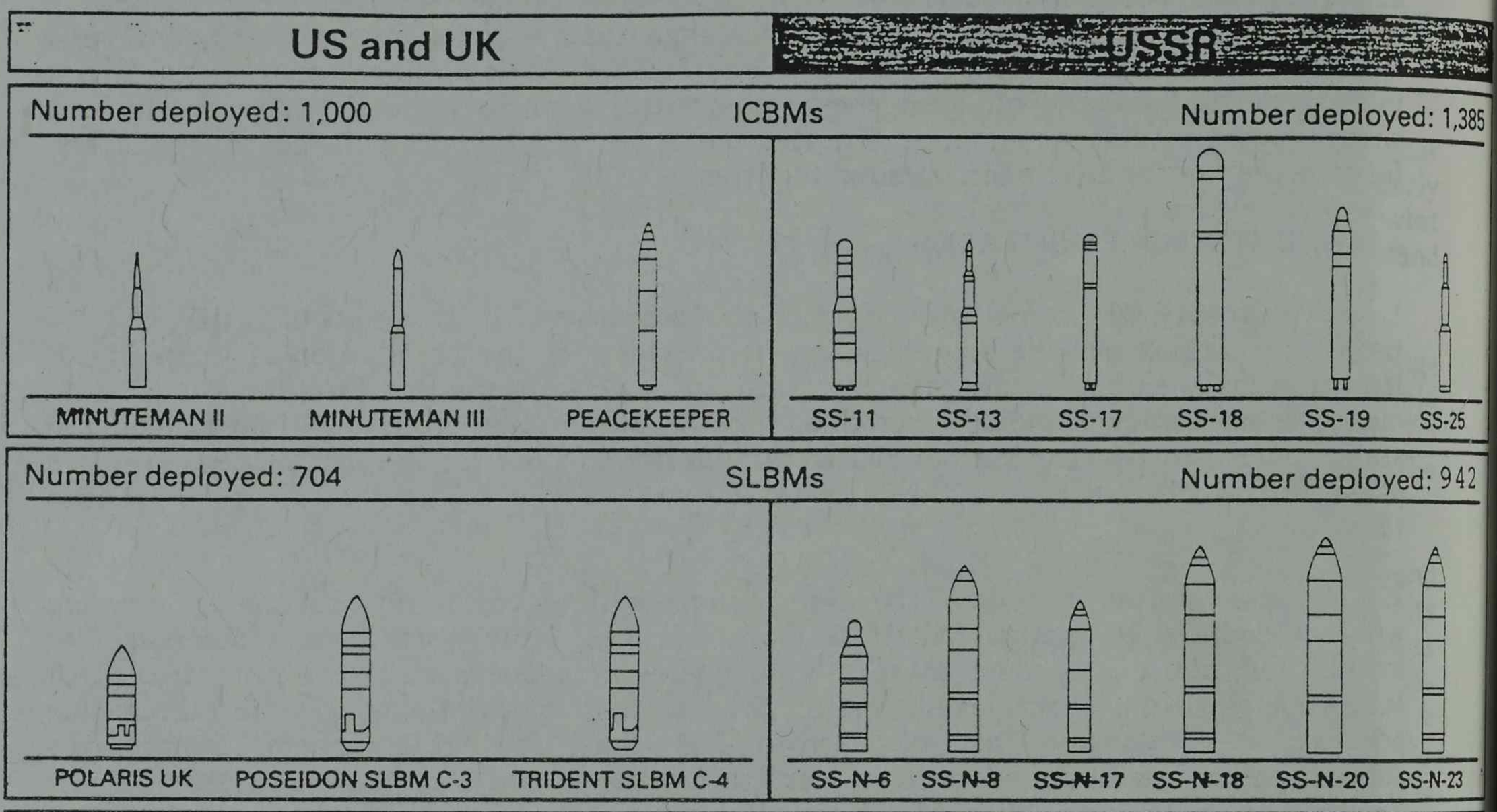
Strategic Arms

204. The last year has also seen significant progress in the negotiations between the United States and the Soviet Union on 50% reductions in strategic offensive arsenals. This represents another of NATO's arms control priorities and the United States has closely consulted the United Kingdom and other allies as talks have proceeded. At the summit meeting in Washington in December 1987, it was agreed that the aim should be to sign a treaty, building on a number of agreed elements. These included:

- ceilings of 6,000 strategic nuclear warheads and 1,600 delivery vehicles;

Fig 2 - A Guide to Strategic Delivery Systems - Typical

Range above 5500km ♦



♦ – French systems are not included. They comprise 96 SLBMs, 18 S3 missiles and about 35 Mirage IV Bombers

- within this, ceilings on ballistic missile warheads of 4,900, and on heavy ballistic missile warheads of 1,540;

- agreed counting rules for the various delivery systems and warheads covered by these ceilings; and

- an intrusive verification system, including the right of on-site inspection, designed to deal with a regime in which missiles and systems would be reduced but not, as in the case of the INF Treaty, eliminated.

205. This provides a clear framework for a treaty, and we hope that progress will continue towards an early agreement. But a number of important issues remain to be resolved including the treatment of mobile land-based missiles and sea-launched cruise missiles, counting rules for air-launched cruise missiles, detailed verification measures, and links with ballistic missile defence research and the 1972 Anti-Ballistic Missile (ABM) Treaty.

206. On the latter, the United States and Soviet Union agreed at the Washington summit to work towards a commitment 'to observe the ABM Treaty as signed in 1972, while conducting their research, development and testing, as required, which are permitted by the ABM Treaty, and not to withdraw from the ABM Treaty for a specified period of time'. They also agreed that this commitment would have the same legal status as a treaty on strategic offensive arms, and that three years before the expiry of the specified period discussions would begin on strategic stability. If, after the specified period expired, no other agreement had been reached, both would be free to decide on their courses of action.

207. Discussions to turn these words into precise agreements are continuing, and both sides have since proposed texts in the Geneva negotiations. To meet Soviet concerns about the SDI, the United States has proposed a commitment not to withdraw from the ABM Treaty until 1994, annual exchanges of information on research programmes, and other provisions to develop greater mutual predictability in respect of such programmes. We hope that Mr Gorbachev's admission, before the summit, that the Soviet Union is undertaking anti-ballistic missile research similar to the US SDI programme, signals a determination to reach final agreement on these issues.

208. The United Kingdom's approach to anti-ballistic missile defence research and associated treaty matters remains based on the agreements reached between the Prime Minister and President Reagan at Camp David in December 1984 and November 1986, which together state that:

- the SDI research programme which is permitted by the ABM Treaty should continue;

- the US and Western aim is not to achieve superiority, but to maintain balance, taking account of Soviet developments;

- SDI-related deployment would, in view of treaty obligations, have to be a matter for negotiation;

- the overall aim is to enhance, and not to undermine, deterrence;

- East-West negotiation should aim to achieve security with reduced levels of offensive systems on both sides; and

- these matters should continue to be subject to close consultation within the Alliance.

Against this background the United Kingdom fully supports the US SDI research programme. It is vital to our defence that the West should be at the forefront of new technology, and able to respond to the comparable and very considerable Soviet programme.

Nuclear Testing

209. The step-by-step approach to nuclear testing constraints, advocated by President Reagan in 1986 and agreed by Mr Gorbachev in September 1987, led to further US-Soviet negotiations, which opened in November. Their aim, as a first step, is to develop verification arrangements that would allow ratification of the US-Soviet Threshold Test Ban Treaty and the Peaceful Nuclear Explosions Treaty. To this end experts from each side visited the other's nuclear testing sites, at Semipalatinsk in the Soviet Union and in Nevada in the United States, in January 1988. Discussions continue on related issues.

210. The United Kingdom fully supports, and has consistently advocated, a step-by-step approach to nuclear testing issues. We support the principle of progress towards the ultimate goal of a comprehensive test ban, taking account in this of the serious verification problems that still remain to be resolved. Nuclear weapons will form part of the Western strategy of deterrence for the foreseeable future; and in the absence of a comprehensive test ban we shall continue to take all necessary measures, including periodic testing at the minimum level, to ensure that our deterrent remains credible.

CONVENTIONAL ARMS CONTROL

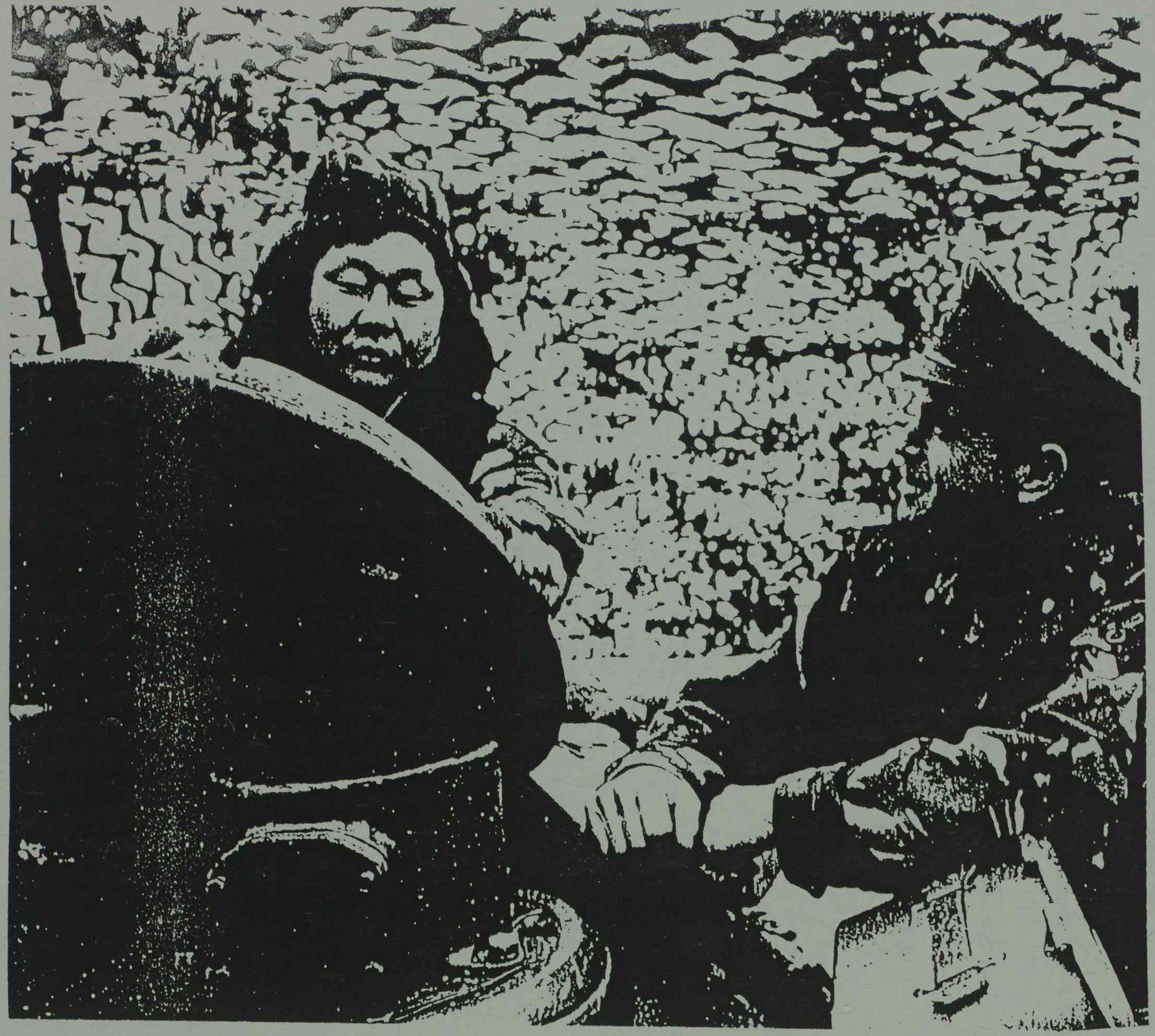
The Stockholm Document

211. The confidence- and security-building measures agreed in September 1986 at the Stockholm Conference on Disarmament in Europe, under the auspices of the Conference on Security and Cooperation in Europe (CSCE), have worked well:

- In December 1986, the United Kingdom and other participants carried out the first exchange of annual calendars of planned notifiable military activities.

- During 1987, states participating in the CSCE were invited to send observers to seven exercises by NATO countries and eight Warsaw Pact exercises. Of these, British forces were observed in two exercises: KEYSTONE (see paragraph 305) and PURPLE WARRIOR (see page [ ]). On both occasions between 30 and 40 observers attended from some 20 countries, including 12 observers from six Warsaw Pact countries. This was the first time the Warsaw Pact officers concerned had had direct contact with British soldiers. British officers observed exercises in the German Democratic Republic, Czechoslovakia and the Soviet Union.

- The provisions for on-site inspections to resolve doubts about compliance with the agreement were invoked five times during 1987: once each by the United Kingdom (a Soviet exercise in the German Democratic Republic in September), the United States (in respect of Soviet activities in the Minsk area in August), and the German Democratic Republic (an exercise by the Federal Republic of Germany in November); and twice by the Soviet Union (the multinational NATO exercise DISPLAY DETERMINATION in Turkish Thrace and a US exercise in the Federal Republic, both in October).



2 - Soviet Tank Crew and British Observer at Soviet Exercise in the German Democratic Republic

These represent encouraging steps forward. But there is still much to be done to achieve greater openness about military activities and capabilities.

Conventional Forces in Europe

212. NATO's aims in future conventional arms control negotiations were set out in the Brussels Declaration of December 1986. These aims were endorsed and further elaborated by NATO leaders at their summit meeting in March 1988. They include the establishment of a stable, secure and verifiable level of forces in the whole of Europe from the Atlantic to the Urals, aimed at eliminating disparities and reducing capabilities for surprise attack and large-scale offensive action. The declaration also called for further negotiations on confidence- and security-building measures, enlarging on those in the Stockholm Document. Informal discussions between NATO and Warsaw Pact representatives about a mandate for the new conventional stability talks began in February 1987. Meanwhile, a review meeting of the CSCE has been looking at ways of taking forward negotiations on confidence-building. The NATO allies tabled draft mandates for both sets of negotiations in July 1987.

213. The United Kingdom has played a leading role in developing Alliance negotiating positions and in the discussions about mandates, which have proceeded in a business-like atmosphere. Agreement has now been reached on parts of the mandate for the new conventional stability talks, which, it is hoped, will formally open later this year. The Western proposals envisage that negotiations on confidence-building will involve all 35 states of the CSCE, while those on conventional stability will be within the CSCE framework but limited to the 23 members of NATO and the Warsaw Pact.

214. The Soviet Union now acknowledges both a superiority in tanks and the need to deal with asymmetries wherever they exist. This is welcome, although it is not yet accompanied by any recognition of the overall superiority of Warsaw Pact conventional forces. The provision and serious discussion by both sides of data on force levels will be essential if progress is to be made towards an agreement. We shall therefore need to put Soviet words to the test as and when a mandate for the new talks can be agreed and full negotiations begin.

215. As the NATO summit concluded, the major problem is the Warsaw Pact's superiority in key conventional weapon systems. But other asymmetries are also important, including the Pact's capability for surprise attack and large-scale offensive action, based on forward-deployed Soviet forces (see page [ ]), and the geographical advantages enjoyed by the Pact with consequent benefits for its reinforcement

capability (see pages [ ] and [ ]). These asymmetries are compounded by the dominant presence of Soviet conventional forces which comprise two-thirds of all active Warsaw Pact divisions in Europe west of the Urals.

216. Meanwhile, in the negotiations on Mutual and Balanced Force Reductions (MBFR) in Vienna, dealing with conventional forces in Central Europe, NATO continues to press the Warsaw Pact to respond positively to its 1985 proposals. In particular, NATO had then suggested that agreement on the current size of either side's forces be deferred while an initial reduction in US and Soviet forces was made. It remains the case that the Warsaw Pact has neither provided adequate data on force levels nor accepted Western proposals on verification.

CHEMICAL WEAPONS

217. The United Kingdom remains committed to a global and comprehensive ban on the development, production and stockpiling of chemical weapons; and we continue to play a leading and active role in the Conference on Disarmament in Geneva, where negotiations on a chemical weapons convention are taking place. The negotiations have been dominated by Western initiatives and proposals. But over the past two years there have been welcome signs of Soviet willingness to respond more positively to Western attempts to secure a comprehensive and global convention that is truly verifiable.

218. In particular, the response to the United Kingdom's initiative on challenge inspection, at the Conference on Disarmament in July 1986, has been encouraging. In August 1987, Mr Shevardnadze announced that the Soviet Union would support a provision for mandatory challenge inspection in a chemical weapons convention, for which the British proposals could form a basis. The United Kingdom also tabled, in July 1987, a further paper setting out some of the practical arrangements that would have to be agreed to allow the implementation of an effective global ban.

219. Despite the progress made, a number of important and complex issues still have to be resolved. The United Kingdom is continuing to press in Geneva for progress on a variety of outstanding questions concerning verification, which remains the most critical and difficult issue in the negotiations.

220. The Soviet Union has also made some useful moves towards greater openness about its chemical warfare (CW) capabilities (see also page [ ]). It has acknowledged, for the first time, possession of CW stocks and has claimed that stocks of chemical weapons in the Soviet Union do not exceed 50,000 tons in terms of toxic agents. This

figure, however, is significantly below Western estimates of the total Soviet stockpile and requires clarification. In October 1987, the Soviet Union invited the participants in the Conference on Disarmament to visit its CW installation at Shikhany, reciprocating a similar invitation to the US facility at Tooele in 1983. This was welcome, although the visit was limited and revealed little of modern Soviet stocks and production capability. The Soviet Union has also accepted the British invitation, made in 1986, to exchange visits between the Chemical Defence Establishment at Porton Down and Shikhany; planning for this is now in hand.

VERIFICATION

'Verification is not the icing on the cake. It is an essential ingredient'.

Sir Geoffrey Howe,
Speech to the International Institute for
Strategic Studies,
London,
January, 1987.

'Foolproof ..... methods providing 100% confidence that weapons are indeed being eliminated, that obligations relating to the remaining weapons and permitted military activities are being complied with, and that the bans are not being circumvented - this, and no less than this, is the verification that we envisage.'

Mr Shevardnadze
Speech to the UN Conference on Disarmament,
August, 1987.

1. It is no longer necessary to make the case for verification. In principle, it is accepted by both East and West as an essential element of any arms control agreement. But there remains the difficult practical question of what precise measures are required in each particular case.

2. We have come a long way since the agreements of the 1970s, which either contained virtually no cooperative verification measures (the Biological Weapons Convention of 1972), or relied on the mutual acceptance by the superpowers that national technical means - essentially surveillance from space - could be used unimpeded (the SALT Agreements). The two agreements recently signed, the Stockholm Document of 1986 and the INF Treaty of 1987, both contain provisions for on-site observation and inspection.

3. **INF** verification depends on a series of interlocking obligations and measures. The global solution makes the task easier since, after elimination, the existence of a single missile would be a violation. And the obligations to destroy certain visible support structures as well as missiles, and to ban flight testing, assist the detection of violations. The detail involved in the verification arrangements is remarkable. It includes exchanges of data on each side's missile deployments and holdings, designation of deployment areas, as well as on-site inspection (including inspection at short notice) of missile bases and production plants over a period of 13 years. These arrangements will enable each side initially to check the accuracy of data exchanged, then to monitor the elimination of missiles and their production facilities, and, when that process is completed, to ensure that missiles are not reintroduced. Even more remarkable are the provisions for continuous monitoring at the perimeter of a Soviet plant assembling SS-

25 missiles, where there is a particular potential for circumvention. None of this provides a guarantee that undeclared missiles could not be retained. But it reduces to acceptable limits any risk that a militarily significant operational capability could be preserved or created without detection.

4. Future agreements will need measures tailored to their individual circumstances. The verification arrangements for an agreement on **strategic arms reductions** would have to take into account the fact that many different types of systems would remain, including land-based intercontinental ballistic missiles (some of them mobile), submarine-launched ballistic missiles, cruise missiles, and strategic bombers. Monitoring of residual ceilings would therefore be essential, in circumstances where the credibility of at least some of these systems for deterrence purposes depends partly on their concealment while deployed operationally. This would be a more demanding task than verifying the INF Treaty. The verification framework that has already been agreed in the strategic arms negotiations acknowledges the need for continuous monitoring of the perimeter of critical production and support facilities, for short-notice inspection of suspect sites not otherwise declared, and for open displays of treaty-limited items at bases and ports at times chosen by the other side. The evolution of this framework into precise measures, which balance the requirements of verification, operational flexibility and national security, will be a complex and difficult matter.

5. NATO's other immediate arms control priorities, in respect of conventional and chemical weapons, arguably face even greater verification problems. In the MBFR negotiations on **conventional** forces NATO has proposed a package of detailed measures designed to provide confidence both that initial troop reductions had occurred, and, more important, that consequent force levels were not exceeded. The measures include permanent entry and exit points through which all troops would pass, provision of detailed information on residual forces, and 30 inspections a year, in order to monitor force levels of a million men in more than 2,000 camps and barracks spread over some 200,000 square miles of Central Europe. So far the Warsaw Pact has not accepted these proposals, which it claims are disproportionate to the obligations incurred. But, in the West's view, considerably more complex arrangements would be required for any agreement - such as that envisaged in the proposed new conventional stability talks (see paragraphs 212-215) - that dealt with the whole of Europe from the Atlantic to Urals.

6. A ban on **chemical weapons** would introduce two further complications: global coverage, and the continued need for civil industry to use relevant chemicals. The United Kingdom has taken the initiative in the Conference on Disarmament, where we have made proposals for challenge inspection and for an international system to monitor compliance, including compliance by industry. There is a difficult balance to be struck between reasonable assurance of compliance, deterrence from cheating, practicality of implementation, confidentiality of commercial information and protection of national security.

7. The main complication in verifying a **Comprehensive Test Ban** would be the difficulty of distinguishing low-level, but militarily significant, nuclear tests from natural phenomena and conventional explosions. There is also a danger that nuclear explosions could be hidden from detection by masking techniques. A step-by-step approach to this issue (see paragraphs 209-210) would help to overcome these difficulties.

8. The West has led the way in the search for practical and effective verification measures, proposing new ideas, like designated deployment areas and perimeter monitoring. The manner in which these, and other aspects of the INF verification arrangements, are implemented will influence the evolution of the more complex arrangements needed in future agreements. The details will remain all important: if they are wrong, the benefits of arms control agreements can disappear in unresolved accusations and suspicions of non-compliance and deceit.

AIMS FOR THE FUTURE

221. When NATO Ministers reviewed their arms control aims at Reykjavik in June last year, they agreed that the prospective INF agreement would be an important element in a coherent and comprehensive concept of arms control and disarmament, which, while consistent with NATO's strategy of flexible response, would include:

- a 50% reduction in the strategic offensive nuclear weapons of the United States and the Soviet Union, to be achieved during the current Geneva negotiations;

- the global elimination of chemical weapons; and

- the establishment of a stable and secure level of conventional forces, by the elimination of disparities, in the whole of Europe.

They also concluded that, in conjunction with the establishment of a conventional balance and the global elimination of chemical weapons, tangible and verifiable reductions of US and Soviet land-based nuclear missile systems of shorter range, leading to equal ceilings, could be considered. These aims were reaffirmed by the NATO summit meeting in March, which recognised the urgency and central importance of addressing the conventional force imbalances in Europe.

222. Although the INF Agreement is a major achievement, it will not obviate the need for effective deterrence. Chapter 1 explains why nuclear weapons will still be needed for that purpose. Last year's Statement described the important contribution made by the British independent deterrent to the effectiveness and credibility of the Alliance's deterrence strategy; it also explained that the British strategic nuclear force, even when updated by the acquisition of Trident, represents the minimum capability necessary to maintain effective deterrence into the next century. The United Kingdom's position on the role of our own nuclear deterrent in strategic negotiations remains that, if Soviet and US strategic arsenals were to be very substantially reduced and if no significant changes had occurred in Soviet defensive capabilities, we would want to consider how we could best contribute to arms control in the light of the reduced threat. But US and Soviet reductions would have to go much further than 50% before we could consider including the British deterrent in arms control negotiations: even after such a reduction and the introduction of Trident, the British deterrent would

still represent a smaller proportion of Soviet strategic offensive warheads than did Polaris when it entered full operational service in 1970.

223. The priority in strategic arms negotiations, as both NATO and the Soviet Union accept, must thus be reductions in US and Soviet arsenals, which are far greater than the forces of the other nuclear weapon states - amounting to some 95% of the world-wide total. A 50% reduction, removing many thousands of nuclear warheads, would not undermine either NATO or Soviet strategies, but would, through its political effect, significantly enhance stability. It will not be possible, however, to move towards greater stability in Europe while the significant Warsaw Pact superiorities in conventional and chemical forces remain. The United Kingdom therefore believes that there should be no negotiations about further reductions of nuclear weapons in Europe until the imbalance of conventional forces in Europe has been redressed and a ban on chemical weapons achieved.

224. NATO's future arms control aims thus address the continuing security needs of Europe, while offering realistic prospects for successful negotiation of agreements. As has been shown, significant progress has already been made. The close relationship between the arms control process and other aspects of security policy was recognised by Ministers at their Reykjavik meeting, when they commissioned work in NATO to develop a comprehensive concept of arms control and disarmament. This is now proceeding.

ESSAY

THE FORWARD DEFENCE OF EUROPE

1. When the Atlantic Alliance was formed in 1949, it was recognised that the forces kept by the Soviet Union in Eastern Europe since the end of the Second World War posed the greatest threat to the freedom of the West. This threat has required NATO to maintain large ground and air forces of its own in the Federal Republic of Germany. But this of itself has never been enough. Any successful defence of Europe would be linked to the success of operations in the Norwegian Sea, in North Norway and the Baltic Approaches, and on the Southern Flank. This essay, therefore, looks at how the threat from the Warsaw Pact would be countered forward in the European arena as a whole.

2. NATO's strategy of forward defence dates formally from a meeting of the North Atlantic Council in New York in 1950. The determination expressed then to resist any attack on Alliance territory as far to the East as possible derives logically from the commitment made by the signatories of the North Atlantic Treaty to defend all the territory of the Alliance. The consequences of doing otherwise were described by the Federal German Minister of Defence, Herr von Hassel, in 1963:

> 'To regard the Federal Republic, or even a large part of Western Europe, solely as a battlefield, which NATO forces would have to liberate afterwards, would forecast the total destruction of Western Europe. This appears to me hardly a valid objective of defence policy'.

3. Initially, the forces deployed for this purpose were those of the Western occupying powers: the United States, Britain and France. But the modified Brussels Treaty and Paris Agreements of 1954 opened the way for the admission of the Federal Republic to membership of the Alliance and for the stationing of troops from other NATO countries on its soil. The exact size and composition of Alliance forces have varied over the years, but the commitment to forward defence has remained. As the Alliance made the transition from the so-called tripwire strategy of massive nuclear retaliation to the strategy of flexible response in the 1960s, the contribution of forward-deployed forces to deterrence increased in importance. Their contribution remains vital today.

4. Forward defence is not an aggressive strategy: Alliance leaders have consistently said that NATO forces will never be used except in response to an attack. Nor indeed do NATO forces have the capability to mount an offensive to seize Eastern Europe. The aim of the Alliance is to maintain sufficient forces, both in place and as

reinforcements, to contribute to deterrence by demonstrating its determination to resist aggression. If deterrence should fail, the aim would be to compel the Warsaw Pact to reinforce its own in-place forces before mounting an attack; this would provide early warning of Pact intentions, enabling NATO to reinforce to its full strength and providing a breathing space in which efforts could be made to defuse the crisis. If an attack with conventional forces took place, NATO's aim would be to defend Alliance territory for as long as possible without recourse to nuclear weapons.

5. There are three interrelated elements to the forward defence of Europe:

. On the Central Front, the requirement is to counter any aggression across the Inner German Border (IGB). The Federal Republic has 30% of its population and 25% of its industrial capacity located within 100km of the IGB. This fact alone might be sufficient to justify defending forward. But the Alliance also has little scope to concede territory for military reasons. The absence of France from NATO's integrated military structure means that all Western forces on the Central Front, with their associated airfields, ammunition dumps, support and other facilities, are located in a narrow corridor 250km-350km wide, consisting of the Federal Republic and the Benelux countries. There are also tactical advantages to be gained from such a strategy; the terrain close to the IGB contains marshes, canals, rivers and urban sprawl, all of which favour the defender.

. Forward deployment of NATO's maritime power is an integral part of the strategy, and British maritime forces play a particularly valuable role. The conventional defence of Europe depends on safeguarding trans-Atlantic and cross-Channel lines of communication, which are vital to the reinforcement of Europe. The Soviet threat would come especially from submarines capable both of disrupting our shipping and, in the case of those armed with cruise missiles, of launching conventional or nuclear attacks on land targets. In the event of conflict, containment of these forces as far to the north as possible would be the most effective way of reducing the threat in the greater expanse of the Atlantic Ocean; and would help to safeguard the United Kingdom and the countries of the Northern Region.

. On NATO's flanks, the security of Alliance countries depends on the reinforcements required for their defence arriving in time. Britain's main contribution is in the Northern Region where, as well as our forward maritime role, British amphibious, land and air reinforcements must deter

aggression and help our allies hold the ring until the arrival of major US forces. Any alternative strategy would leave Norway, Denmark and Iceland at risk. It would also increase the threat, via the Baltic Approaches, to the Central Front and the United Kingdom. While British forces make a smaller contribution in the Southern Region, a similar Alliance commitment there is equally important to the integrity of NATO's defence, and is an indispensable element in the cohesion of the Alliance.

The British forces that contribute to forward defence are set out in paragraph 302. The disposition of NATO forces on the Central Front is described [below].

6. Forward defence does not necessarily imply a static defence. At sea and in the air this is self-evident, but it is equally true on land. In order to take advantage of force improvements, such as recent developments in anti-armour capability, Northern Army Group (NORTHAG) has adopted a more mobile operational concept that acknowledges the possibility of initially having to yield ground. Reconnaissance forces would identify the main axes of attack and a quick-reacting covering force would, if necessary, delay the enemy to allow the main forces to prepare defensive positions. Ground defence forces, supported by air forces, would then exploit obstacles and minefield barriers to break up and reduce invading forces, while mobile reserves (including air-mobile forces - see page [ ]) would attack the flanks and the rear of enemy spearheads.

7. While NATO ground forces would seek to defeat the first wave of Soviet troops, NATO air forces have several roles, including defence against Soviet air power, air support involving short-range attacks on Soviet ground forces, and interdiction of follow-on forces. The Alliance is now updating its land/air concept for Follow-On Forces Attack. This is intended to delay the movement and arrival of enemy second echelon forces and to disrupt the timing and coordination of combined operations, thus relieving the pressure on NATO ground forces. In all this, the inherent flexibility, reach and rapid reaction of air power would be crucial.

8. The chief problems that face NATO in carrying out this strategy are the numerical superiority of the Warsaw Pact forces in the area, and NATO's reliance on reinforcement to bring its own forces up to full strength. Reinforcement is essential because an unacceptable burden would be placed on the Federal Republic and other contributing nations if forces were stationed at full battle strength on the Central Front in peacetime. But such a strategy carries risks. The problem is most severe for

North American and British reinforcements, which involve movement by sea of large quantities of men and materiel. But Dutch and Belgian reinforcements would have to travel up to 200 km and, of NATO forces actually in the Federal Republic, fewer than 25% are based within 50 km of their intended defensive positions. The Warsaw Pact, by contrast, can reinforce its own forces relatively easily (see page [ ]).

9. Nevertheless, provision of forward-deployed NATO forces of sufficient strength, readiness and capability provides an essential component of flexible response, and helps avoid undue reliance on early use of nuclear weapons. Forward-deployed forces also give a clear signal to the Soviet Union that aggression will instantly involve the forces not just of the Federal Republic but also of the United States and other allies. As long as US forces contribute to forward defence in Europe, the Soviet Union can be in no doubt that any attack would involve a superpower confrontation, with all the incalculable risks of escalation to a nuclear exchange that this would entail.

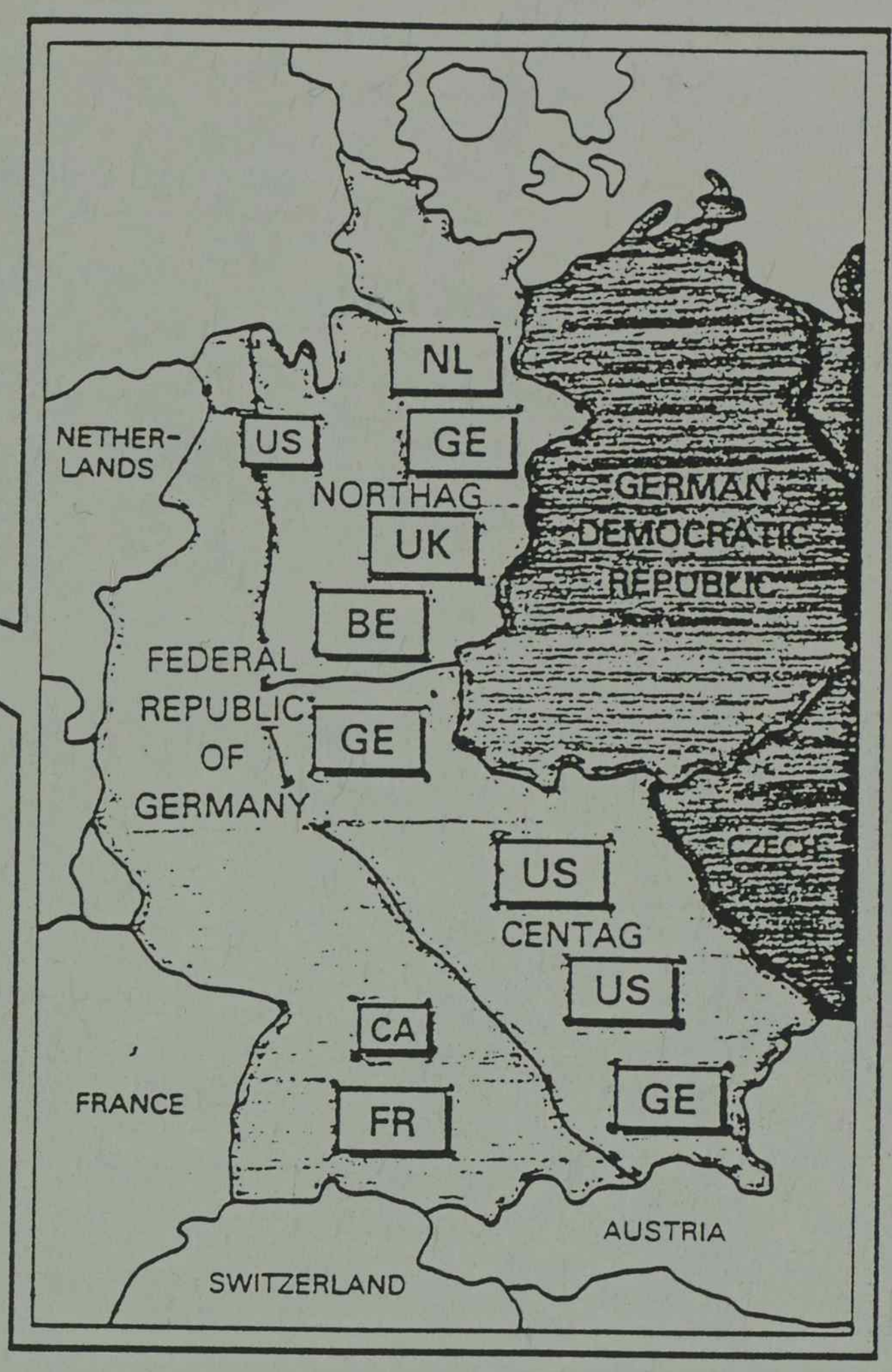
NATO FORCES ON THE CENTRAL FRONT

[Figure 3]

1. The British contribution on the Central Front, 1 BR Corps and RAF(Germany), is described in paragraph 302. With a peacetime strength of some 55,000 Army and 12,000 RAF personnel it is larger than the contribution of any of our continental allies except the Federal Republic. The US presence is some 250,000 strong, Belgium's 29,000, the Netherlands' 8,000, Canada's 6,000 and that of the Federal Republic itself, 495,000. Although France does not participate in NATO's military structure, it stations 50,000 troops in the Federal Republic under the terms of the modified Brussels Treaty of 1954. In time of crisis or tension all these in-place forces would be substantially reinforced (see page [ ]). On mobilisation, the size of the British forces would be nearly trebled.

2. All these forces generally remain under national control in peacetime and, with the exception of the French, are transferred to NATO under the command of SACEUR in time of tension or war. The map shows how they are distributed. The Central Front is divided into two Army Groups (NORTHAG, commanded by a British officer, and CENTAG), each of which is sub-divided into four sectors. Each sector is the responsibility of a national corps (a group of two to four divisions comprising 35-90,000 men before reinforcement). Looking from north to south in NORTHAG there are Dutch, Federal German, British and Belgian corps; and in CENTAG there are a Federal German, two American and a further Federal German corps. French and Canadian forces are held further back in the south, and an American brigade (the forward-positioned part of a US Corps normally based in the United States) is similarly placed in the north. The allied air forces are divided into two tactical air forces (2 ATAF in the north commanded by a British officer, and 4 ATAF in the south) under the overall command of COMAAFCE (Commander Allied Air Forces Central Europe).

Fig 3 - NATO Forces on the Central Front



CHAPTER THREE: THE ARMED FORCES

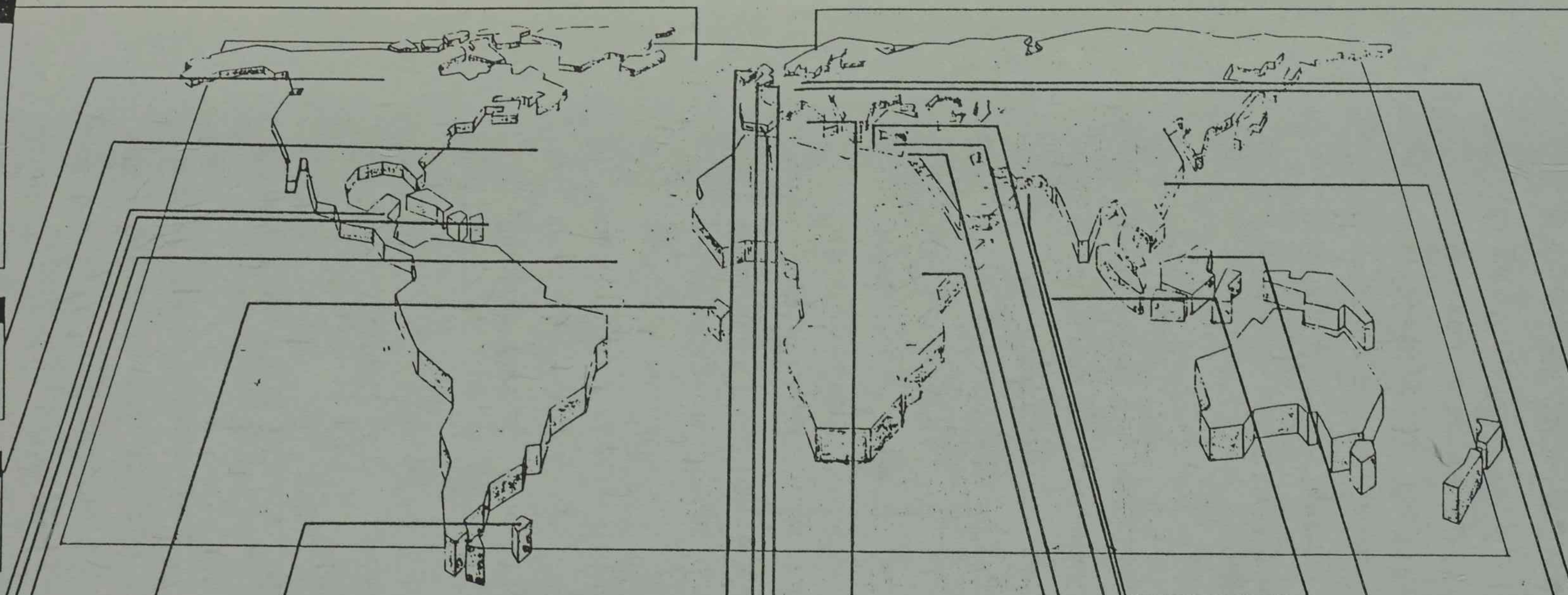
301. This chapter sets out the contribution made by the armed forces to each of our main defence roles during the year. It reports on the progress of the Services' equipment plans and on their other activities, including those outside the NATO area and their involvement with the civilian community. In addition, it takes a more detailed look at topical aspects of each of the three Services' tasks.

BRITAIN'S MAIN DEFENCE ROLES

302. The great majority of our forces are committed to carrying out our four main roles in NATO:

- **Nuclear Forces.** Since 1969, Britain's strategic force of last resort has been the Royal Navy's Polaris submarines, at least one of which is on patrol at all times. These vessels will be replaced by Trident missile-carrying submarines in the mid-1990s (see page [ ]). Our theatre nuclear-capable forces comprise nine RAF strike-attack squadrons of Tornado GR1 and two of Buccaneer, based in the United Kingdom and the Federal Republic of Germany, which can conduct nuclear operations with British free-fall bombs as well as fulfilling their conventional role; the Royal Navy's Sea Harrier aircraft and ship-borne anti-submarine helicopters, which, together with RAF Nimrod maritime patrol aircraft, are able to deliver both conventional and nuclear weapons, including US nuclear depth bombs; and one regiment of Lance surface-to-surface missiles and four regiments of artillery operated by the Army in the Federal Republic and capable of firing nuclear warheads supplied by the United States.

- **Defence of the United Kingdom.** The direct defence of these islands involves all three Services. The RAF, assisted by the Royal Navy, is responsible for the air defence of the United Kingdom and the surrounding seas (see page [ ]). The Royal Navy and the RAF help to keep open our re-supply routes across the Atlantic, and the mine countermeasures vessels of the Royal Navy and the Royal Naval Reserve (RNR) combat the threat posed to our ports and coastal waters by mines (see [below]). On the ground, the task of protecting vital military bases and installations falls mainly to the Army and the RAF. Over 100,000 ground forces are available for the defence of the United Kingdom, including the Home



EASTERN ATLANTIC and NORTH SEA

RN

Destroyers, Frigates, Submarines, RFAs, MCMVs, Offshore Patrol Vessels, SOV, Survey Vessels, Shore-based Wessex and Sea Kings.

RAF

Buccaneers, Canberras, Nimrods, Phantoms, Victors, VC10s.

CANADA

Army

Training Units.

RAF

Tornado Detachment.

WESTERN ATLANTIC

RN

Destroyers, Frigates, RFAs.

BELIZE

Army

1 Armd Recce Troop, 1 Field Artillery Battery, 1 Engineer Sqn, 1 Infantry Bn, 1 Flight AAC.

RAF

Harriers, Pumas, ½ RAF Regt Sqn (Rapier).

WEST INDIES

RN

Destroyer, Submarines, RFA.

CENTRAL ATLANTIC

RN

Survey vessel.

ASCENSION ISLAND

RAF

Hercules.

FALKLAND ISLANDS

RN

Submarines, Destroyers, Frigates, Survey Vessel, Offshore Patrol Vessel, RFAs, STUFT, Ice Patrol vessel.

Army

1 Infantry Bn Group, Supporting Arms and Services.

RAF

Phantoms, Hercules, Chinooks, Sea Kings, RAF Regt Sqn (Rapier).

NORTHERN IRELAND

RN

Patrol craft, RM Raiding Craft.

Army

HQ Northern Ireland, 2 Brigade HQs, 1 Engineer Sqn, 6 Resident Infantry Bns, 4 Roulement Infantry Bns (one may be RM Commando), 2 Sqns AAC, 9 Bns UDR.

RAF

Pumas, Wessex, RAF Regt Sqn.

GREAT BRITAIN

RN

ASW Carriers, Destroyers, Frigates, Submarines, MCMVs, Offshore Patrol Vessels, RFAs, Survey Vessels, Helicopters, Royal Marines Commando Forces, Royal Marines SBS, Royal Marines Forces for home defence.

Army

Specialist Reinforcement Units for NATO, Reinforcements for BAOR, Forces for home defence, 1 SAS Regiment.

RAF

Andovers, Buccaneers, Canberras, Chinooks, Harriers, Hawks, Jaguars, Lightnings, Nimrods, Phantoms, Pumas, Hercules, VC10s, Sea Kings, Shackletons, Tornados GR1 & F3 Tristars, Victors, Wessex, communications aircraft & helicopters, Bloodhound, Rapier, Skyguard RAF Regt Sqn.

SARDINIA

RAF

Phantom, Harrier, Tornado, Jaguar and Hawk detachments.

CHANNEL

RN

Destroyers, Frigates, Submarines, MCMVs, Offshore Patrol Vessels, RFAs, Shore-based Wessex and Sea Kings.

RAF

Canberras, Nimrods.

GIBRALTAR

RN

Frigate, Lynx.

Army

1 Infantry Bn.

RAF

Airbase detachments.

CYPRUS

Army

1 Armd Recce Sqn, 1 Engineer Support Sqn, 1½ Infantry Bns, 1 Flight AAC.

RAF

Phantom and Tornado detachments, 1 Wessex Sqn, 1 RAF Regt Sqn.

UNFICYP Contingent

1 Armd Recce Sqn, ½ Infantry Bn, 1 Flight AAC, Supporting Services.

SINAI

MFO Detachment.

KENYA (Exercise)

Army

1 Engineer Sqn.

BRUNEI

Army

1 Gurkha Infantry Bn, 1 Flight AAC.

DIEGO GARCIA

RN

Naval Party, RM Detachment.

THE GULF

RN

Destroyers, Frigates, RFAs, MCMVs, MCM Command Ship.

MEDITERRANEAN

ASW Carrier, Destroyers, Submarines.

NORWAY (Exercise)

RN

RM Commando Brigade HQ, 2 RM Commandos with combat and logistic support, Sea Kings and Wessex helicopters, RM Assault Sqn.

Army

1 Infantry Bn Group.

RAF

Harriers, Jaguars, Pumas, Chinooks.

BERLIN

Army

Infantry Brigade.

RAF

Support Units.

WEST GERMANY

Army (BAOR)

1 Corps HQ, 3 Armoured Divisions, 1 Artillery Brigade.

RAF Germany

Jaguars, Tornados, Phantoms, Harriers, Andovers, Pumas, Chinooks, Rapier, RAF Regt Sqns.

HONG KONG

RN

Patrol Craft.

Army

1 Gurkha Engineer Regt, 1 UK Infantry Bn, 3 Gurkha Infantry Bns, 1 Squadron AAC.

RAF

1 Wessex Sqn.

AAC	Army Air Corps	HQ	Headquarters	Recce	Reconnaissance	SOV	Seabed Operations Vessel
Armd	Armoured	LPD	Assault Ship	Regt	Regiment	Sqn	Squadron
ASW	Anti-Submarine Warfare	MCMV	Mine Countermeasures Vessel	RFA	Royal Fleet Auxiliary	STUFT	Ships Taken Up From Trade
BAOR	British Army of the Rhine	MFO	Multinational Force and Observers	SAS	Special Air Service	UDR	Ulster Defence Regiment
Bn	Battalion	RE	Royal Engineers	SBS	Special Boat Squadron	UNFICYP	United Nations Force in Cyprus

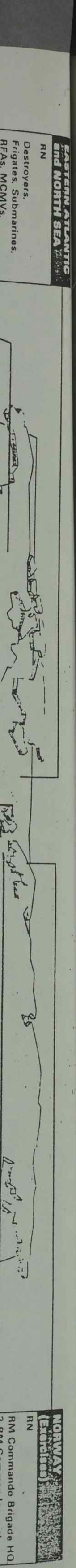
Note: This map does not include 566 loan service personnel deployed worldwide

Service Force (HSF), the Royal Auxiliary Air Force (R Aux AF) Regiment and elements of the Territorial Army (TA), as well as elements of the Royal Navy and Royal Marines.

- **Defence of the European Mainland.** We station ground and air forces on the Continent as our contribution to the forward defence of NATO and in fulfilment of our commitments under the modified Brussels Treaty; and we keep forces ready to reinforce the flanks in times of tension (see page [ ]). The British Army of the Rhine (BAOR), based in the Federal Republic, is the main component of our forces on the Continent. It consists of I(BR) Corps, which forms part of NORTHAG, and is responsible for the defence of a 65km stretch of front. The Corps comprises three divisions, which include armour, infantry, artillery and air defence units. Other ground forces, based in the United Kingdom but ready for rapid deployment to reinforce NATO's flanks, include the British contingent of the United Kingdom and Netherlands Amphibious Force and the United Kingdom Mobile Force (UKMF) for use in the Northern Region, and a contribution to the Allied Command Europe Mobile Force (AMF), which could deploy to either the northern or southern flank; the RAF's transport force contributes to this capability. RAF Germany consists of 15 squadrons of aircraft, and forms part of 2 ATAF. Its main role would be to carry out long-range attacks against enemy airfields and lines of communication; and RAF squadrons would provide air defence, tactical reconnaissance, close air support for the Army, and logistics and tactical air transport. We also maintain forces, not assigned to NATO, in Berlin and Gibraltar.

- **Maritime Forces** in the Eastern Atlantic and Channel areas. Our forces - ships, submarines and aircraft of the Royal Navy, and aircraft of the RAF - make a significant contribution to forward defence in the Norwegian Sea (see page [ ]), and to maritime operations in the Atlantic and shallow seas, where they would be primarily concerned to protect the deployment of our strategic deterrent and ensure the safe arrival of reinforcement and resupply shipping. The United Kingdom has the largest navy of any European NATO country and contributes some 70% of the ships available in these areas with the ability to deploy early at a time of tension or war.

303. We have described in detail in previous Statements how the Services carry out these roles. Their ability to do so is maintained by constant training and a full



programme of exercises, both national and Alliance-wide. In the last year, WINTEX-CIMEX, held in March 1987, was the most wide-ranging of these exercises. It is a biennial command post (or paper) exercise designed to practise NATO's command and control procedures and to test the effectiveness of national crisis management organisations in times of increasing international tension or war. In the United Kingdom, our participation extended down to District Headquarters level.

MINE COUNTERMEASURES IN HOME WATERS

[Figure 5]

1. One of the more serious threats to shipping around our ports and anchorages in wartime would come from the modern sea mine, which, if not countered, could affect the deployment of our Polaris submarines and endanger the safety of shipping carrying vital reinforcements and supplies.

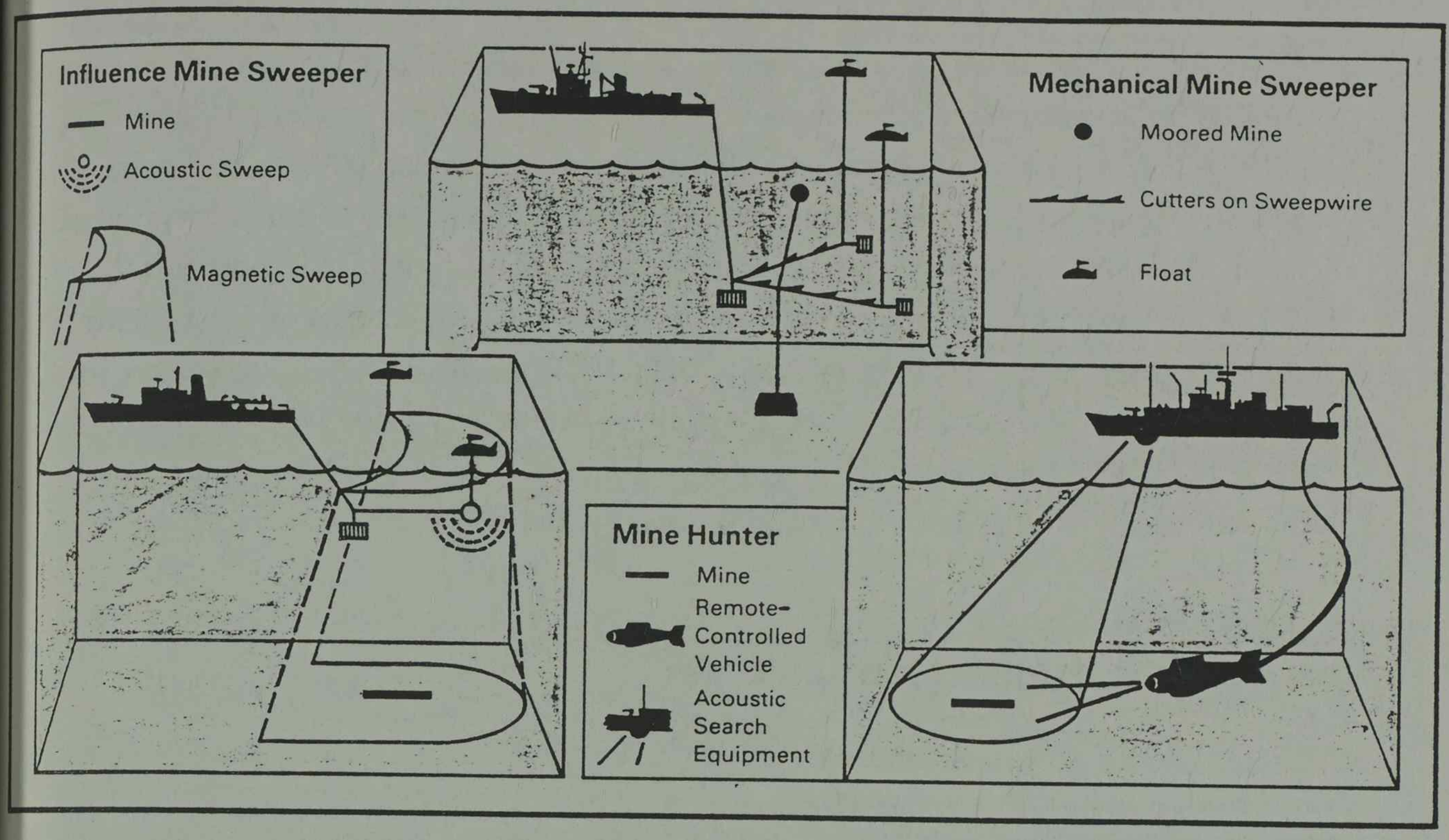
2. Today's mines come in several forms. The influence mine is equipped with sensor mechanisms designed to detect such characteristics as the underwater acoustic, magnetic or pressure signatures (either singly or in combination) of potential ship targets. The contact mine is designed to explode when it touches a ship's hull. Mines can also be designed to lie on the sea bed (ground mines) or at a predetermined depth, tethered by a wire to the sea bed (moored mines). Variants exist that can propel themselves upwards to explode under passing vessels.

3. The Royal Navy deals with the mining threat either by hunting or by sweeping; the choice depends on the type of mine expected. Minehunters (the Hunt or new Sandown class vessels) are equipped with high definition underwater acoustic search equipment, which generates an electronic image of the sea bed, including objects lying proud of it. Once a mine-like object has been detected, it is identified using a remote-controlled vehicle launched from the minehunter. This process can deal with all mines and does not rely on knowing how any individual mine is designed to work. The mines can either be destroyed or, in some cases, recovered for examination.

4. Minesweepers (the Hunt again or River class) can destroy mines either by influence or mechanical sweeps. The influence minesweeper uses equipment, normally towed, which generates underwater acoustic or magnetic signals (singly or in combination) that mimic those of a ship and deceive influence mines into exploding. Mechanical minesweepers are equipped with specially designed steel wires, which are towed through the water, astern and either side of the vessel, to sever the tethering wire of moored mines. The mine either then explodes or can be destroyed when it rises to the surface.

5. The RNR makes an important contribution to our mine countermeasures capability, manning 11 of the 12 River class minesweepers in the Fleet. These low-cost vessels are specially designed for minesweeping in deeper waters. The RNR also provides crews for other vessels, such as trawlers, that in wartime would be taken up from trade for mine countermeasures purposes.

Fig 5 - Mine Countermeasures



304. **The defence of the United Kingdom** involves the Services in regular training for their tasks. In addition, in 1987 the Royal Navy tested its mine countermeasures capability in several exercises with NATO partners. The Army reviewed plans during WINTEX-CIMEX for the mobilization and deployment of Regular, TA and HSF troops, in preparation for a series of exercises to be held in Autumn 1988 to test current plans. Studies were also carried out into the use of helicopters, command and control, and logistics in support of military home defence operations. All aspects of our air defence system are exercised regularly; in April 1988, for example, some 1,200 sorties were flown by other NATO aircraft, testing our air defences during the nationwide exercise ELDER FOREST. On average RAF fighters scramble three or four times each week to intercept and identify aircraft entering the United Kingdom Air Defence Region (UKADR).

AIR DEFENCE OF THE UNITED KINGDOM

[Figure 6]

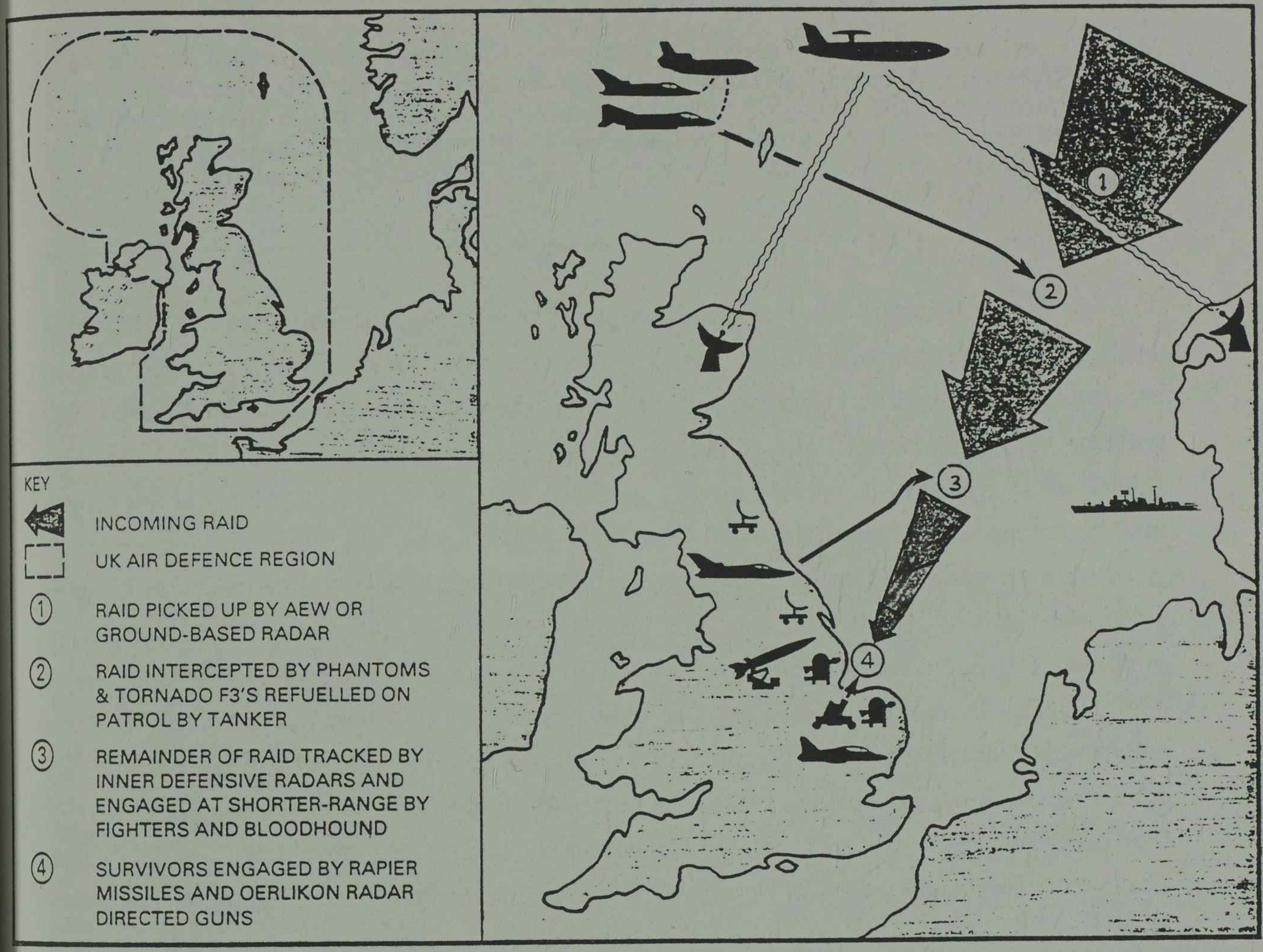
1. The strategic position of the British Isles ensures that, in the event of a major conflict between East and West, we would be a prime target for attack. The destruction of our air defence assets, including aircraft, airfields and radar sites, would be among the enemy's first priorities as he sought to gain air superiority. Responsibility for the air defence of the United Kingdom rests with RAF Strike Command, which maintains a constant radar watch over the air and sea approaches to the United Kingdom, and holds aircraft on ground alert at all times ready to scramble and intercept unwelcome intruders into the UKADR. In time of tension or war, continuous combat air patrols would be flown. Royal Navy ships with an air defence capability also contribute to our defences.

2. In the event of conflict, NATO's own offensive operations could be expected to reduce the enemy's ability to attack the United Kingdom by destroying his airfields and aircraft on the ground. But a substantial threat would remain from long-range bombers, some equipped with stand-off weapons. To deal with this, the RAF has developed the sophisticated system of layered defences illustrated above. The first line of defence aims to detect and intercept hostile aircraft entering NATO airspace, destroying them before they approach their targets. In order to deploy these defences swiftly and effectively, a comprehensive NATO-wide command, control and communications system is vital. As part of this a new system, known as the improved United Kingdom Air Defence Ground Environment, will soon be operational, receiving information from a new generation of transportable radars; and airborne early warning will be much improved from 1991 onwards as the seven Boeing E-3s on order enter service.

3. The responsibility for initial engagement of enemy aircraft would lie with the Tornado F3, armed with Skyflash medium-range and Sidewinder short-range air-to-air missiles. Two squadrons have been formed during the last year, and all seven squadrons will have entered service by the early 1990s. Supporting the Tornados would be two squadrons of Phantoms armed with Skyflash and Sidewinder and an inner shield of Hawk aircraft equipped with Sidewinder. Air-to-air refuelling would enable most of our fighters to remain longer on patrol and operate further from their bases.

4. Enemy aircraft that penetrated the outer defensive screen would additionally face attack by Bloodhound surface-to-air medium-range missiles; if they still survived they

Fig 6 - Air Defence of the United Kingdom



would be engaged by the shorter-range Rapier missiles and radar-directed Oerlikon guns that protect our most important airfields. In addition, passive measures, such as placing aircraft on the ground in hardened shelters and dispersing key assets, would help to reduce the damage inflicted. On the ground, defence of our air bases from terrorists or enemy special forces would be provided by RAF Regular personnel and six squadrons of the R Aux AF Regiment.

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305. **The defence of the European mainland** requires an intensive annual programme to test Alliance forces both in their operational roles and in the complex task of reinforcement from the home base. The major exercise of the year was REFORGER in Autumn 1987, in which troops of the III (US) Corps deployed from the United States to the Central Region and subsequently, in Exercise CERTAIN STRIKE, practised plans and procedures for operations in the NORTHAG area; the United Kingdom's 4th Armoured Brigade and other troops from 1(BR) Corps also participated. In October 1987, the United Kingdom-based 2nd Infantry Division, comprising 19,000 personnel including TA elements, was deployed by RAF transport aircraft and by sea for Exercise KEYSTONE. Once in theatre, the deployed forces joined elements from 1(BR) Corps and troops from the Federal Republic and Belgium to undertake combined defence and counter-attack operations against air-landed and mechanised forces. The main part of the exercise involved over 32,000 troops and, under the terms of the Stockholm Document (see paragraph 211), was witnessed by 39 observers from 17 signatory countries. The training that the RAF carries out for its operational role on the Central Front is described on page [ ]. In October 1987, air defence Phantoms from RAF Germany took part in exercise RED FLAG in Nevada for the first time; the excellent training available in this exercise closely resembles possible Central Front scenarios. Between January and March 1988, both the United Kingdom and Netherlands Amphibious Force and the British forces that form part of the AMF carried out annual arctic warfare training in Norway.

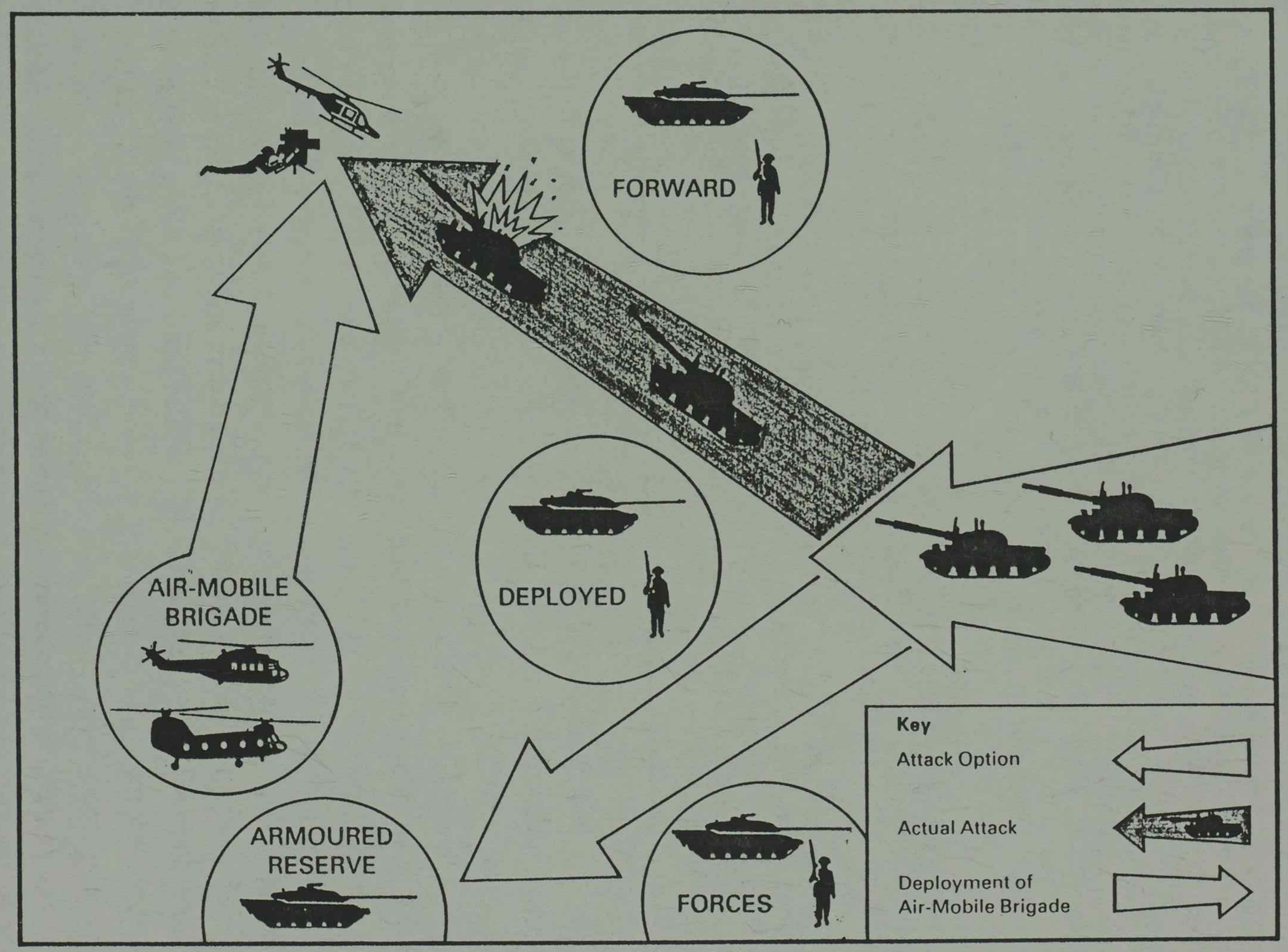
AIR MOBILITY

[Figure 7]

1. Warsaw Pact military doctrine (see page [ ]) relies on the concentration of massive force to overwhelm defending forces and achieve a breakthrough. To counter this threat, NORTHAG devised its concept of flexible operations (see page [ ]). A key element of this is the ability to counter enemy forces, particularly their armoured formations, should they penetrate NATO's front line, using mobile reserves with a powerful anti-tank capability.

2. Helicopter-borne forces are ideal for this purpose. The axis of an enemy advance would not be known until very shortly before his attack began. Until then the defending forces would be faced with several possible lines of attack; and the task of

Fig 7 - Air Mobility



identifying the main axis of advance would be made more difficult by the enemy's use of feints and deception to disguise his intentions. To be effective, allied armoured reserves would have to be committed early to the battle, possibly before the enemy's intention was clear, whereas air-mobile forces could be held back and moved swiftly into position when required.

3. In 1984, 6 Brigade of 1(BR) Corps, based at Soest, was tasked with conducting trials of a doctrine for air-mobile operations in close cooperation with the RAF. The doctrine, as developed, involved the use of RAF Puma and Chinook helicopters to move men and equipment into concealed positions behind the NATO front line at the point where an imminent enemy breakthrough had been identified. The infantry would be armed with Milan - the Army's medium-range man-portable anti-tank system. They would be supported by Lynx helicopters of the Army Air Corps, armed with TOW - the longer-range wire-guided anti-tank missile. The considerable anti-tank power of these combined forces would be brought to bear on the enemy as he breached the allied front line. Their aim would be to disrupt and halt the advance of his armour, allowing time for allied armour to move in and complete the destruction of enemy formations or compel him to retreat.

4. The success of this trial over the past four years has produced a doctrine for air-mobile operations, and identified procedures and equipment, which will allow these operations to be developed into the next century.

5. This year, 24 Brigade will begin conversion to the air-mobile role in place of 6 Brigade; it will include an Army Air Corps regiment equipped with both anti-tank and utility Lynx helicopters supported by the RAF's troop-carrying and heavy-lift helicopters. The EH101 is intended to succeed the Puma in these roles in the 1990s.

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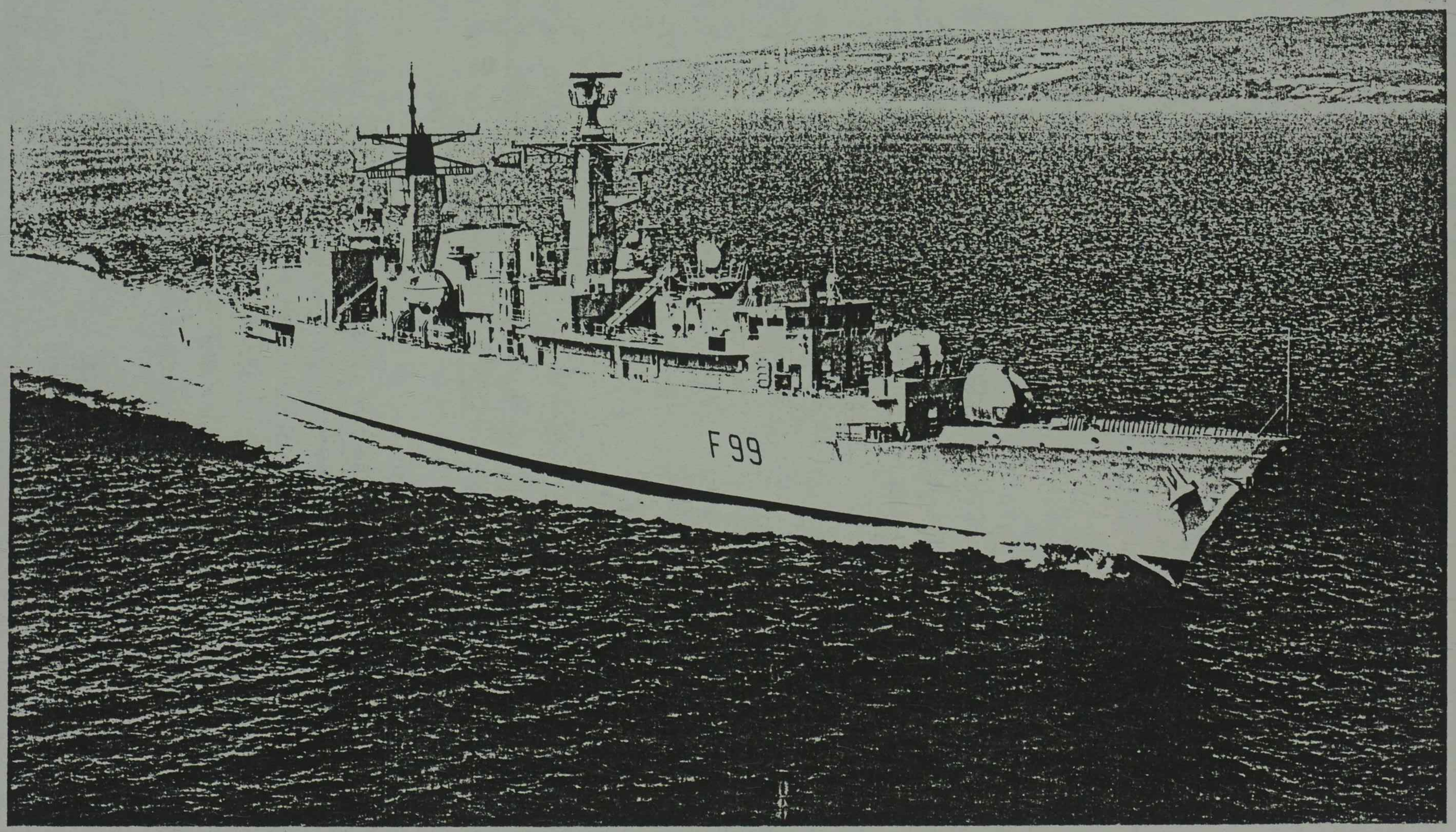
306. Our **maritime** forces have also maintained a high level of activity. In August and September 1987, the Royal Navy contributed 20 warships and Royal Fleet Auxiliaries to OCEAN SAFARI, one of an annual series of NATO maritime exercises in the north and mid-Atlantic. RAF Phantoms were deployed to the forward operating base at RAF Stornoway, and Buccaneer and Canberra aircraft undertook maritime operations, supported by VC10 and Tristar tankers. In all, over 150 ships and 250 aircraft took part from 11 countries. The main purpose of the exercise was to practise the protection of reinforcement and convoy shipping. This involved the assembly and escort of four convoys from the Canary Islands to the south coast of England; forward anti-submarine warfare (ASW) defence was also practised in the Norwegian Sea. Apart from such set-piece exercises, every ship and submarine of the Royal Navy, when new or emerging from refit, undergoes a rigorous period of training at Portland or on the Clyde before undertaking operational duties; and, once operational, vessels periodically return for shorter periods of such training to ensure that they remain as effective as possible. Other NATO nations also regularly carry out sea training at Portland, and take part in joint Royal Navy and RAF maritime exercises around the British Isles. The Royal Navy continues to maintain its commitment to the Standing Naval Force Atlantic, Standing Naval Force Channel and Naval On-Call Force Mediterranean. The



3 - HMS Cornwall (Type 22 Batch 3 Frigate) Undergoing Trials

RAF again demonstrated its excellence in ASW by winning, for the second successive year, the Fincastle Competition held between maritime patrol squadrons from Australia, Canada, the United Kingdom and New Zealand.

307. The programme for the remainder of 1988 sees this pattern continuing and units from all three Services will participate in land, sea and air exercises in the NATO area. In May, for instance, RAF Nimrods and a Commando Group of the Royal Marines (the latter embarked in two Landing Ships Logistic (LSL) and HMS Intrepid) will take part in the amphibious phase of exercise DRAGON HAMMER in the western Mediterranean. And in September, units from the Royal Navy, Royal Marines and the RAF will join forces from nine other NATO nations in the major maritime and amphibious exercise, TEAMWORK 88, in the eastern Atlantic and the Norwegian Sea; the UKMF with RAF support will take part in Exercise BOLD GROUSE in the Zealand area of Denmark; and British elements of the AMF will deploy to Turkey for Exercise ALLY EXPRESS. In the United Kingdom, there will be a number of individual regional Military Home Defence exercises in the Autumn.

THE ROYAL NAVY

308. The Navy's current strength is described at Annex A, and recent additions to its equipment programme are set out in Table 1. Progress in the Trident programme is described on page [ ].

309. The programme to modernise our conventional naval forces is proceeding well. The final three Trafalgar class nuclear-powered Fleet submarines are being built or undergoing trials (including HMS Trenchant, scheduled to enter service later this year), as are the first four of the new Upholder class conventionally-powered patrol submarines. The first of the latter class, HMS Upholder, is to enter service in this financial year. The Government remains committed to maintaining an escort force of about 50 frigates and destroyers: we have invited tenders for up to four more Type 23 frigates in addition to the four already on order, and work continues on the four Type 22 frigates currently being built. Orders were placed last summer for the next four Sandown class single-role minehunters as part of the continuing modernisation of our mine countermeasures capability, which has seen 25 vessels ordered since 1979.

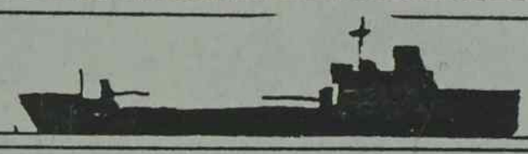
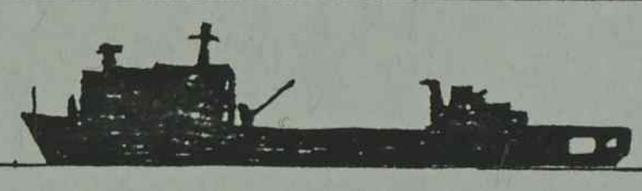
310. Contracts were also placed last summer for feasibility studies into the option of replacing the assault ships Fearless and Intrepid with new ships, thus maintaining our amphibious capability in the longer term. We shall assess the results of these studies, along with the completed study on the ship-life extension option, in good time to decide

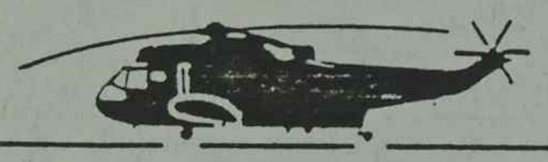
Table 1 - Royal Navy Equipment

Submarines	Numbers brought into service 1987-88	Numbers ordered 1987-88	
Trident Submarines	—	1	

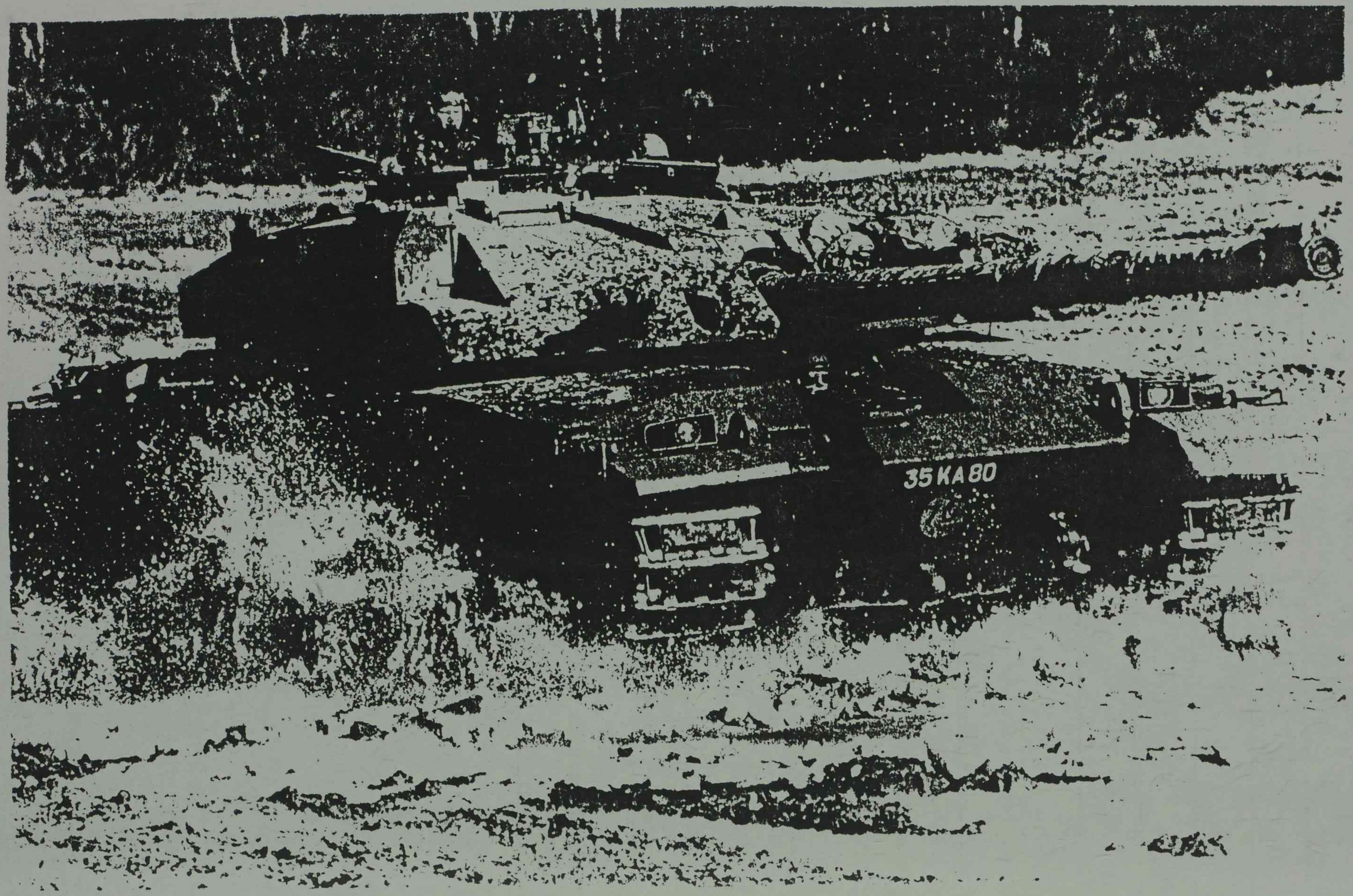
Frigates			
Type 22	2	—	

MCMVs			
Hunt Class	1	—	
Sandown Class	—	4	

Auxiliaries			
Auxiliary Oiler Replenishment Vessel	—	1	
Landing Ship Logistic	1	—	
Aviation Training Ship	1	—	

Naval Aircraft			
Sea King Mk4	—	3	
Sea King Mk6	—	4	

Other Naval equipment ordered in 1987-88	
Sonar 2074	Order for hull-mounted sonar for Submarines
GWS 26 Mod 2	Development and production of Lightweight Seawolf



4 - Challenger Main Battle Tank

what to do when Fearless and Intrepid reach the end of their current useful lives in the mid-1990s. The purpose-built LSL, RFA Sir Galahad, whose predecessor was lost in the Falklands campaign, joined the Fleet last November and immediately participated in her first beach landing in Exercise PURPLE WARRIOR (see page [ ]). The air-training ship Argus should complete her trials and enter operational service later this year. Construction of the first Auxiliary Oiler Replenishment vessel has started and an order was placed for the second last December. Stocks of fuel, spares, stores and most weapons and types of ammunition meet NATO requirements in full; and, for example where new weapons have been brought into service or requirements have been increased, plans exist to eliminate shortfalls.

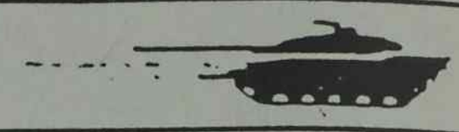
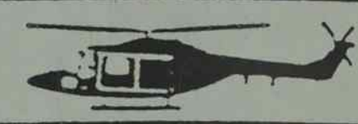
THE ARMY

311. The Army's current strength is given at Annex B. Details of its equipment programme over the last year are in Table 2.

312. New equipment for the Army continues to enter service. In the last year BAOR received its fifth regiment of Challenger tanks, and the first battalion's-worth of the new Warrior mechanised infantry combat vehicle. Three further battalions'-worth of the Saxon armoured personnel carrier have also been delivered. From April 1988, 24 Brigade began to take over the air-mobile role from 6 Brigade (see page [ ]), which will revert to a mechanised role and will consist of an additional Challenger-equipped armoured regiment and two infantry battalions mounted in Warrior. The introduction of the new SA 80 infantry weapons, the S10 respirator and battlefield thermal-imaging equipment continues and the new LAW 80 man-portable anti-tank weapon is entering service this year. Looking further ahead a third air defence missile regiment is to be formed, equipped with the new Starstreak high velocity missile (HVM) system, while existing towed Rapier fire-units will be replaced with the advanced Rapier 2000. Other major new equipment under order for deployment in the next few years includes the Multiple Launch Rocket System (MLRS), the Phoenix remotely-piloted air vehicle, and the new Challenger armoured repair and recovery vehicle.

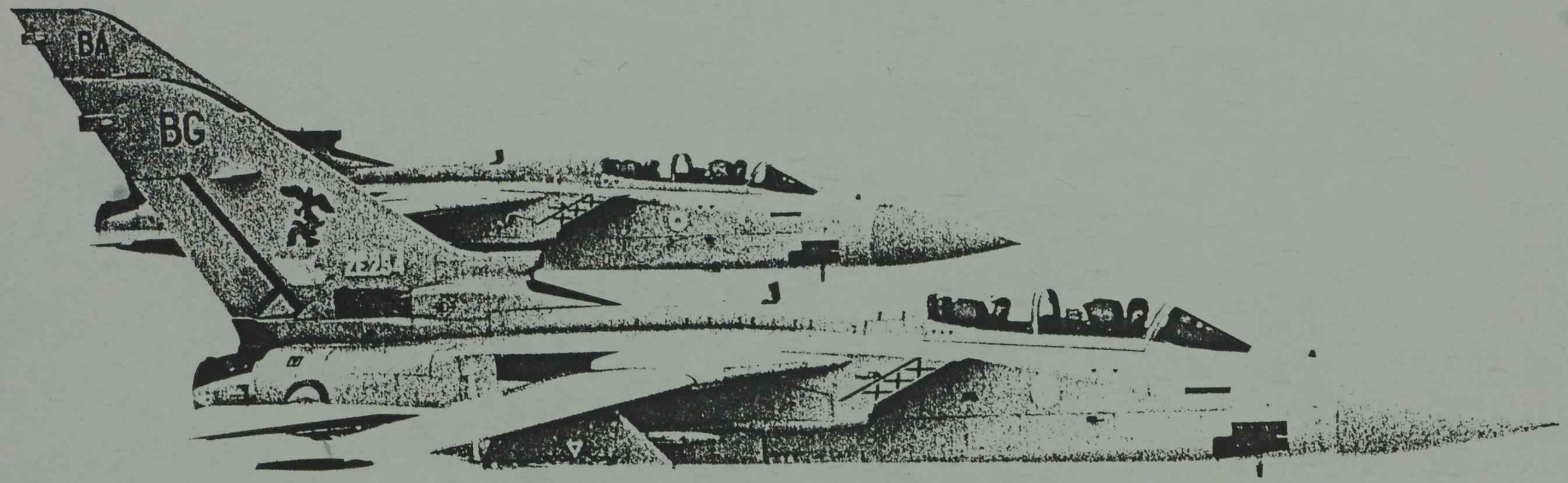
313. This new equipment represents a major advance in the Army's operational capabilities. It will increase the mobility and firepower of the infantry and mechanised units, improve the Royal Artillery's indirect fire capability, and provide protection against a wide range of chemical and conventional threats from the air. In addition, the Army devotes substantial resources to ensuring adequate supplies of war materiel, including fuel, ammunition and spares, for sustained combat.

Table 2 - Army Equipment

	Numbers brought into service 1987-88	Numbers ordered 1987-88	
Tanks			
Challenger	1 regiment	—	
Night Observation and Gunnery Sight	4 regiments equivalent	5 regiments equivalent	
Armoured Personnel Carriers			
Warrior	1 battalion	—	
Saxon	3 battalions (1)	—	
Helicopters			
Lynx Mk 7 (armed with TOW)	2	—	
Air Defence			
Javelin	4 batteries	—	
Air Defence Alerting Device (to equip Javelin/HVM)	—	Full Requirement (2)	
Infantry Weapons			
LAW 80 (Light Anti-Armour Weapon)	Initial batch	—	
SA80	40,000	157,000	
SA80 Night Sight and 3rd Generation Image-Intensifier Tubes	Initial quantities of night sight	2,000	
Electronic Warfare			
Electronic Warfare System	—	1 system	
Nuclear, Biological and Chemical Defence			
General Service Respirator S10	—	balance of requirement (2)	
Chemical Agent Monitor	—	balance of requirement (2)	

Note
(1) Includes one battalion brought into service during 1986-87 but not reported in last year's Statement.
(2) Numbers not given for reasons of security

5 - Lynx helicopter with TOW



6 - Air Defence Tornado F3s of 29 Squadron

THE RAF

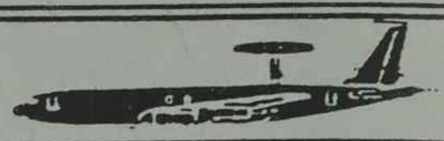
314. The RAF's major equipment modernisation programme continues (see Table 3). Its current strength is shown in Annex C.

315. In the last year, we have ordered an additional Boeing E-3 airborne early warning aircraft to supplement the six ordered previously. This will provide the RAF with a robust capability to mount continuous airborne early-warning patrols. We have also recently placed a production contract for 34 more Harrier GR5 aircraft - in addition to the 62 already on order - to sustain the force into the 1990s. Although there have been some delays as a result of the loss of an aircraft in October 1987 and technical difficulties, the first squadron should form later this year, representing a substantial improvement over the existing GR3. A programme for the provision of a night and poor weather capability is also under way.

316. The first two squadrons of Tornado F3, equipped with Foxhunter radar to an agreed interim standard, formed during the year and are already providing a capability superior to that of the aircraft they replace. A revised fixed-price contract has now been agreed with the contractor to bring the radar up to the required standard. In addition, 2729 (City of Lincoln) Squadron of the R Aux AF Regiment, equipped with ex-Argentinian Oerlikon guns directed by all-weather Skyguard radars, has been declared operational. Two Tucano aircraft, the new basic trainer for the RAF, have been delivered for trials. The ability of our front-line airfields in RAF Germany to continue to operate during wartime will be considerably enhanced with the redeployment from the United Kingdom of a squadron of Royal Engineers for airfield damage repair in 1989.

317. We have placed an order for the Boxer 2 communications bearer system, which will provide a nation-wide secure and survivable communications system using new fibre-optic technology. We have also reached agreement with the prime contractor on how to proceed with ALARM, the advanced anti-radar missile to be carried by Tornado GR1 aircraft. The prime contractor is satisfied with the initial performance of the new rocket motor and the programme will now proceed to completion. The RAF already meets NATO requirements for virtually all warstocks and has plans to remove remaining shortfalls.

Table 3 - Royal Air Force Equipment

Aircraft	Numbers brought into service 1987-88	Numbers ordered 1987-88	
Tornado ADV (Air Defence)	37	—	
Harrier GR5 (Offensive Support)	—	34	
Boeing E-3 (Airborne Early Warning)	—	1	

Other RAF equipment ordered in 1987-88

Boxer 2 Communications Bearer System

FLIGHT SAFETY

318. Each year, the RAF flies sorties all over the world in many different types of aircraft, including Hercules, VC10 transports, Puma helicopters and Tornado fast jets. Flights range from low-level fast-jet training and search and rescue operations to troop and logistic transport. Despite operating in an increasingly demanding environment, the RAF's flight safety record has improved steadily. Since 1981 the accident rate has been almost halved, and in 1987 it was the lowest in the Service's history, there being fewer than one major accident for every 35,000 hours flown (see Volume 2 Table 5.8).

THE MERCHANT FLEET

319. The Government is continuing to monitor the number of merchant vessels on the United Kingdom and dependent territory registers that are available to meet the needs of the armed forces in wartime. Despite the recent decline, numbers are still sufficient for these needs. NATO has agreed to our proposal for a study of the Alliance's ability to meet its needs in time of emergency and war; this is expected to start shortly.

320. Last year's Statement described the steps being taken to ensure the availability of crews for vessels requisitioned in an emergency. For this purpose, the Merchant Shipping Bill, introduced last October, contained provisions enabling the Government both to provide financial assistance for the training and travel costs of British merchant seamen and to establish a Merchant Navy Reserve.

LOW-FLYING TRAINING

1. For deterrence to be effective, our aircraft have to be capable of retaliating against targets deep inside enemy territory, penetrating sophisticated and integrated enemy radar and defensive systems. For the present, the best way of avoiding both detection and interception is to fly as close to the ground and as fast as possible, using the terrain to mask our aircraft from enemy radar.

2. The techniques of low flying over land, however, demand great skill, which can only be acquired by long and careful training, and maintained by constant practice. The acquisition of this skill cannot be left until it is needed operationally. The need for low-flying training has, therefore, been recognised as a vital part of RAF operational doctrine for 25 years or more and is expected to continue into the foreseeable future. Although there has been some increase in this training in recent years, largely as a result of the introduction of the Tornado GR1 aircraft, we expect the level of activity to remain fairly constant from now on.

3. We take great care, however, to limit the nuisance to the public caused by low-flying aircraft, and we shall continue to do so.

4. In war, aircraft would fly as fast and as low as possible - in the Falklands conflict aircraft often needed to fly below 100 ft and at speeds of over 600 mph. But most low-flying training in this country is restricted to 450 mph and above 250 ft. Training at lower altitudes is mainly undertaken in virtually unpopulated parts of the United States and Canada, where we practise down to a level of 100 ft, and participate in exercises which involve flying below 250 ft. Only a very little such flying, mainly essential work-up training for these exercises, is carried out in the United Kingdom in three sparsely populated areas in northern Scotland, the Scottish Borders and central Wales.

5. Unfortunately, it is not possible to reduce low-flying training in this country below its current level without damaging the RAF's operational capability. There is also a limit to how much can be done abroad, not only because that is expensive and wasteful of pilot training time in transit, but also because there is no substitute for training in Europe over the sort of terrain the aircrews would encounter in the event of conflict.

NORTHERN IRELAND

321. The security policy in Northern Ireland, which has been followed by successive Governments, is to fight terrorism with all appropriate resources under the rule of law. The Government is determined to pursue its efforts to restore peace and order in the Province. In the past year terrorist violence has continued; the IRA's Remembrance Sunday bombing at Enniskillen, and the scale of recent arms finds on both sides of the border, underline the nature of the continued terrorist threat. The Army is deployed in Northern Ireland to support the Royal Ulster Constabulary (RUC) in combating that threat; and this remains the Service's most important national peace-time operational commitment.

322. The Ulster Defence Regiment (UDR) now has responsibility for the military element of security in 85% of Northern Ireland. It has nevertheless been necessary to retain ten major units in the infantry role in the Province; their wide range of activities in support of the RUC includes patrolling, manning vehicle check points and guarding buildings. Following a review of the deployment of the security forces in the Province, the Government announced, in January 1988, the establishment of an additional brigade headquarters to support the RUC in the border areas, to improve our counter-terrorist capability there. The remaining forces will continue to support the RUC in the rest of the Province. This reorganisation will not involve any increase in major units deployed in Northern Ireland.

323. The Royal Navy, which carries out patrols to prevent arms smuggling, and the RAF, in a wide range of air-support tasks, also make substantial contributions. The Royal Marines continue to support both Army and Navy operations in the Province.

324. Despite the dedication and professionalism of the security forces, 1987 sadly saw no diminution in the price they have paid. Eleven soldiers were killed, including eight members of the UDR, and a further 101 Servicemen were injured. All eight UDR members were murdered while off duty. Eighty-eight awards for gallantry were made during the year, in recognition of the heroism of these Servicemen and women.

325. The security forces have made steady progress in bringing terrorists to justice and in seizing arms and explosives. During 1987, a total of 468 people were charged with serious offences, including 28 with murder, and 679 people were convicted of offences related to terrorism. In the same period 267 weapons and almost 20,000 rounds of ammunition were seized. In 1987 the Royal Army Ordnance Corps' Explosive Ordnance Disposal (EOD) teams responded to over 1,300 calls; 148 bombs were made safe; and nearly ten tonnes of explosives were found or neutralised, the highest total since 1976.

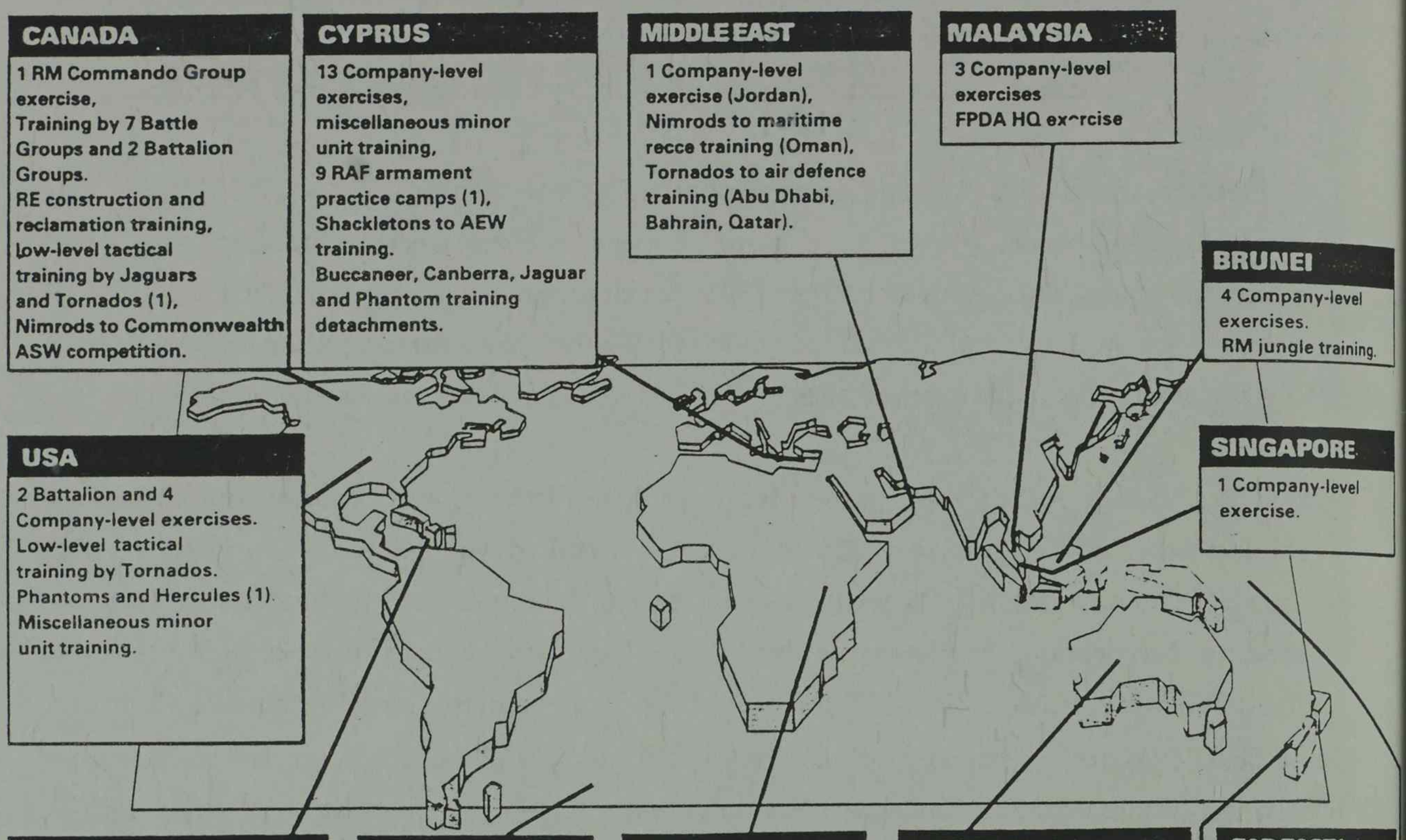
OUT-OF-AREA COMMITMENTS

326. During the past 12 months there have been few major changes to our deployments outside the NATO area, apart from the increase in the contribution made by the Royal Navy to the protection of our merchant shipping in the Gulf (see page [ ]).

327. We continue to keep **permanent garrisons** in the Falkland Islands, Hong Kong, Belize, Brunei and the Sovereign Base Areas of Cyprus. Force levels in the **Falklands** are unchanged since last year, but remain under regular review. In **Hong Kong**, we shall remain responsible for the defence and internal security of the territory until 1997. We have yet to formulate final plans for the phased withdrawal of the garrison as 1997 approaches; all decisions will be taken in consultation with the Hong Kong Government. We have reached agreement in principle with the Hong Kong Government on arrangements for sharing the costs of the garrison from 1 April this year, when the previous agreement expired. In a routine adjustment of force levels, two of the five Hong Kong patrol craft and 3 Raiding Squadron Royal Marines are being withdrawn from the territory during 1988. The force levels and duties of British forces in **Brunei, Belize** and **Cyprus** are unchanged.

328. We regularly exercise our out-of-area capability. PURPLE WARRIOR, in November 1987, was the largest amphibious exercise mounted by the United Kingdom

Fig 8 - Exercises outside Europe in 1987



CANADA

1 RM Commando Group exercise,
Training by 7 Battle Groups and 2 Battalion Groups.
RE construction and reclamation training,
low-level tactical training by Jaguars and Tornados (1),
Nimrods to Commonwealth ASW competition.

CYPRUS

13 Company-level exercises,
miscellaneous minor unit training,
9 RAF armament practice camps (1),
Shackletons to AEW training.
Buccaneer, Canberra, Jaguar and Phantom training detachments.

MIDDLE EAST

1 Company-level exercise (Jordan),
Nimrods to maritime recce training (Oman),
Tornados to air defence training (Abu Dhabi, Bahrain, Qatar).

MALAYSIA

3 Company-level exercises
FPDA HQ exercise

BRUNEI

4 Company-level exercises.
RM jungle training.

SINGAPORE

1 Company-level exercise.

USA

2 Battalion and 4 Company-level exercises.
Low-level tactical training by Tornados.
Phantoms and Hercules (1).
Miscellaneous minor unit training.

CARIBBEAN

RN ships plus support vessels to maritime exercises,
2 Company-level exercises (Belize, Jamaica),
1 Communications exercise (Bahamas/Grand Cayman),
RM minor unit training (Belize),
Nimrods to MP/ASW training (Bahamas).

SOUTH ATLANTIC

4 Company-level exercises.
RE survey training.

KENYA

3 Battalion Group exercises.
RE construction and survey training.

AUSTRALIA

3 Company-level exercises.

NEW ZEALAND

2 Company-level exercises.

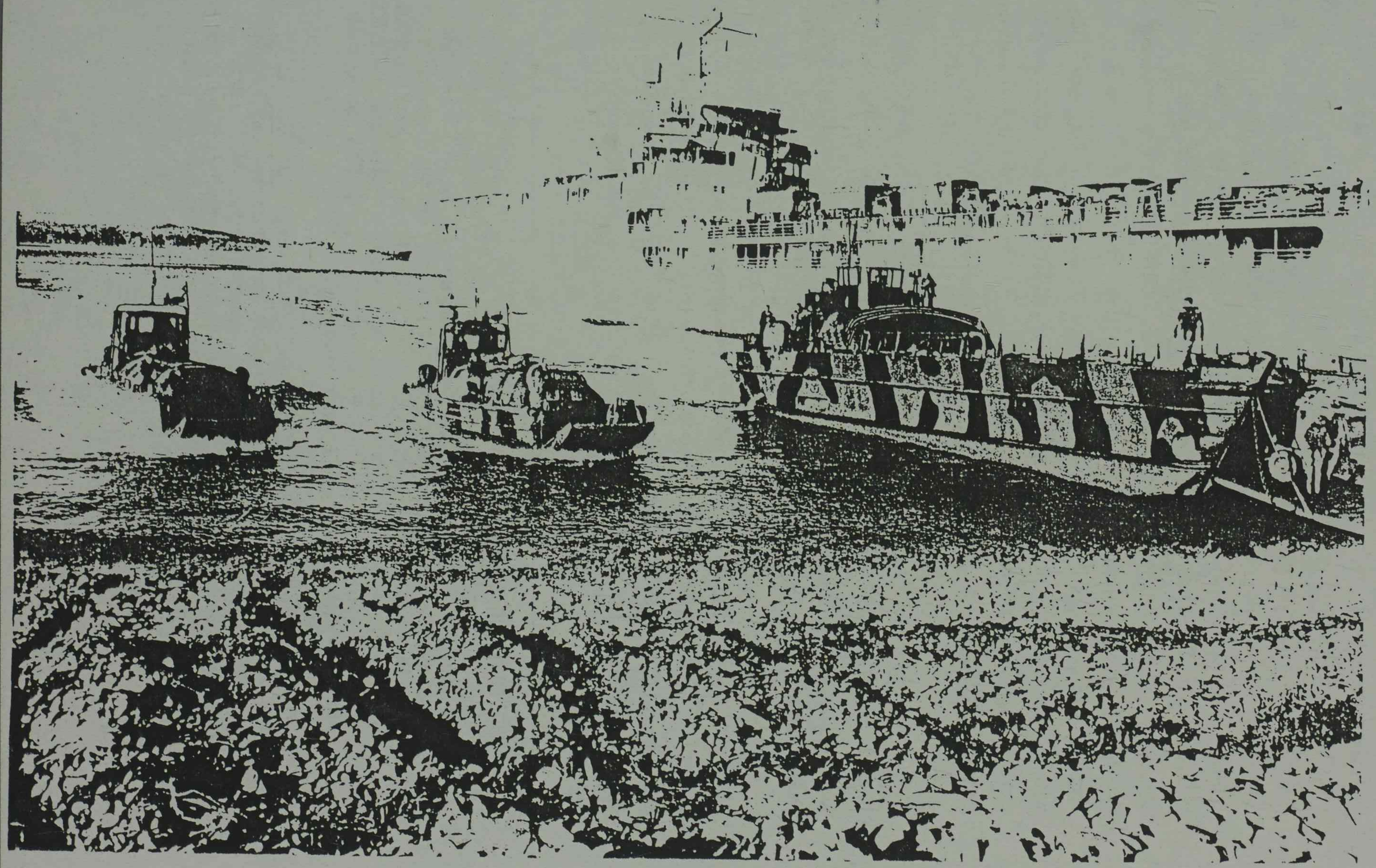
FAR EAST/ PACIFIC

RN Patrol Craft to FPDA Maritime exercise (South China Sea),
1 Company-level exercise (Hawaii),
Miscellaneous minor unit training (Hong Kong).

Note:

(1) These deployments were supported by RAF tanker aircraft

7. Exercise PURPLE WARRIOR: The Joint Force lands in Loch Ryan.



since 1945 (see below). Exercise FIRE FOCUS, in March 1988, rehearsed our capability for rapid reinforcement of the Falkland Islands; the RAF flew some 600 troops and support personnel to the Islands and deployed four Phantom and one Nimrod aircraft to augment other aircraft already there. The programme for the rest of 1988 includes two significant deployments to the Far East and the Pacific. A Royal Navy task group (OUTBACK 88) will take part in a number of exercises in the region, including, in July, the Five Power Defence Arrangements (FPDA) naval exercise STARFISH in the South China Sea and, in September, a combined exercise, SETIA KAWAN, in Brunei, which will also involve British troops from Hong Kong and the armed forces of the Sultan of Brunei. RAF Tornados, supported by a Tristar tanker aircraft, will be deployed from the United Kingdom to take part, in September, in the FPDA air defence exercise LIMA BERSATU, which will also involve ships and Sea Harriers from the Royal Navy task force and forces from Australia, Malaysia, New Zealand and Singapore. The Tornados will then train with the Royal Thai Air Force and visit other countries in the region before joining the naval task force again to take part, with other Service representatives, in the Australian Bicentennial celebrations in October.

329. Our programme of **military assistance** overseas remains wide-ranging and much in demand; in 1986-87 over 600 Servicemen were on loan service in countries outside NATO, and over 3,700 students from such countries attended military training courses in Britain.

330. Our contribution to **international peacekeeping** forces has not changed: we provide contingents to the Multinational Force and Observers in Sinai and the United Nations (UN) forces in Cyprus; and the Cyprus Sovereign Base Areas give logistic support to the UN forces in Cyprus, Lebanon and on the Golan Heights.

EXERCISE PURPLE WARRIOR

1. Exercise PURPLE WARRIOR, which was held in the Irish Sea and south-west Scotland in November last year, was the latest in a programme of exercises designed to develop our ability to react to a crisis outside the NATO area. On this occasion, south-west Scotland represented a notional state, in a group of islands some 1,500 nautical miles from the United Kingdom, entitled to our protection. The scenario assumed that the islands had come under attack from a powerful neighbour.

2. A force comprising 39 ships (including HM Ships Ark Royal, Illustrious and Intrepid) and two brigades (3 Commando Brigade Royal Marines and 5 Airborne Brigade) was assembled in southern England and deployed to the scene of conflict. On arrival, an amphibious operation was mounted in Loch Ryan to secure a beach-head for the landing of a Joint Force. Simultaneously, an airborne assault by the leading parachute Battalion Group of 5 Airborne Brigade, delivered by Hercules aircraft of the RAF air

transport force, secured West Freugh airfield as a resupply and evacuation air-head. Once established on land, the Joint Force, supported by over 100 Royal Navy and RAF helicopters and fixed-wing aircraft, simulated the location and evacuation of British citizens, and went on to practise defensive and counter-attack operations to assist the local government to regain control.

3. The exercise, involving some 20,000 men, of whom approximately 10,000 were deployed ashore, was sufficiently large to require notification under the terms of the Stockholm Document (see paragraph 211).

4. The venture could not have succeeded without the generous cooperation of the people of Galloway, Arran and Kintyre, not least the farmers who agreed to the use of their land and the local volunteers who played 'evacuee'. Many valuable lessons about the conduct of joint Service operations were learnt.

THE SERVICES AND THE COMMUNITY

Volunteer Reserves

331. The past year has seen our reserve forces continue to make a valuable and cost-effective contribution to our defence effort. The TA's strength is now over 25% greater than it was in 1979, and 43 out of the planned 47 companies of the HSF have been formed. In addition, the States of Jersey have agreed to fund a TA Royal Engineer Field Squadron, to be based on the island of Jersey, as their contribution to the defence of the British Isles. The R Aux AF and RAF Volunteer Reserve have expanded five-fold over the same period, and the viability of a support force similar to the TA's HSF is under trial. The RNR has increased by some 10% since plans for its expansion were announced at the end of 1984. The Royal Marines Reserve has increased by more than 50% since 1979. All our reserve forces would play an important role on mobilisation and in war (see paragraph 302); the TA would provide more than 50,000 troops to BAOR, including two infantry brigades, as part of the reinforcement of 1(BR) Corps (see page [ ]).

332. The National Employer Liaison Committee was established in 1986 to provide independent advice to Ministers on measures needed to improve employers' support for the volunteer reserves. The committee has concluded that one of the main causes of turnover in these forces is the shortage of high quality officers needed to maintain the enthusiasm of subordinates, partly because employees find it difficult to take the necessary time off work. We are considering the committee's recommendation that a campaign be mounted to demonstrate to the public, and especially to employers, the benefit to be gained from staff whose leadership, management, specialist and technical skills are improved by military training at no cost to the employer.

Cadets

333. Altogether there are now almost 147,000 cadets, both boys and girls - some 22,000 in the Sea Cadet Corps and Sea Scouts, 44,000 in the Army Cadet Force, 39,000 in the Air Training Corps and 42,000 in the Combined Cadet Force. We are making the cadet forces more attractive for young people by, for example, overseas visits to Regular units, exchange visits with foreign cadet forces and adventurous training. In addition, 500 flying scholarships are awarded each year to male cadets and others who are keen to fly in the RAF, and up to 40 to cadets interested in flying with the Royal Navy.

334. About one-third of all officer recruits to the armed forces and two-fifths of other ranks are former cadets, while all cadets develop a lifelong understanding of the Services. Our aim is to ensure that even those who do not choose a career in the Services are helped to develop worthwhile interests and the values of good citizenship, thereby becoming more useful members of the community.

Bomb Disposal

335. During 1987, EOD teams of all three Services were called to investigate 4,312 incidents outside Northern Ireland (see paragraph 325). Of these 3,792 involved conventional munitions, 66 were terrorist bombs and 454 were false alarms or hoaxes. The discovery near Tower Bridge in June of a 1,000 kg bomb from the Second World War led to an operation lasting 32 hours and requiring the evacuation of 350 local residents. First World War chemical munitions, found buried at the ammunition depot at Bramley in Hampshire in September, were safely removed.

Search and Rescue

336. During 1987, the Ministry of Defence considered proposals for putting the search and rescue (SAR) service in the United Kingdom out to civilian contract. Studies have also been made into the redeployment of military helicopters to provide improved overall coverage. In February 1988, the Government announced that, wherever there is a military requirement for SAR, it will continue to be provided by the Royal Navy and the RAF, whose services will remain available to the wider civilian community.

337. In 1987, SAR helicopters of the Royal Navy and the RAF, and RAF mountain rescue teams, were called out 1,633 times and rescued or assisted a total of 926 people in and around the British Isles. These operations, supported as necessary by RAF

Nimrod aircraft, were all guided by the RAF Rescue Coordination Centres at Edinburgh and Plymouth, working with HM Coastguard. An excellent illustration of this close cooperation was provided on 31 May when the Coastguard asked for help following a collision between the British supertanker Skyron and the Polish cargo ship Hel, east of Ramsgate. While an RAF Nimrod provided top cover, RAF Sea King and Wessex helicopters and a Royal Navy Sea King transported firemen to the Hel, which was ablaze, and stood by while the crew transferred to a waiting ferry and the fire was extinguished. The crew was then able to return to the ship, which continued its voyage to Amsterdam, while the RAF helicopters returned the firemen to land.

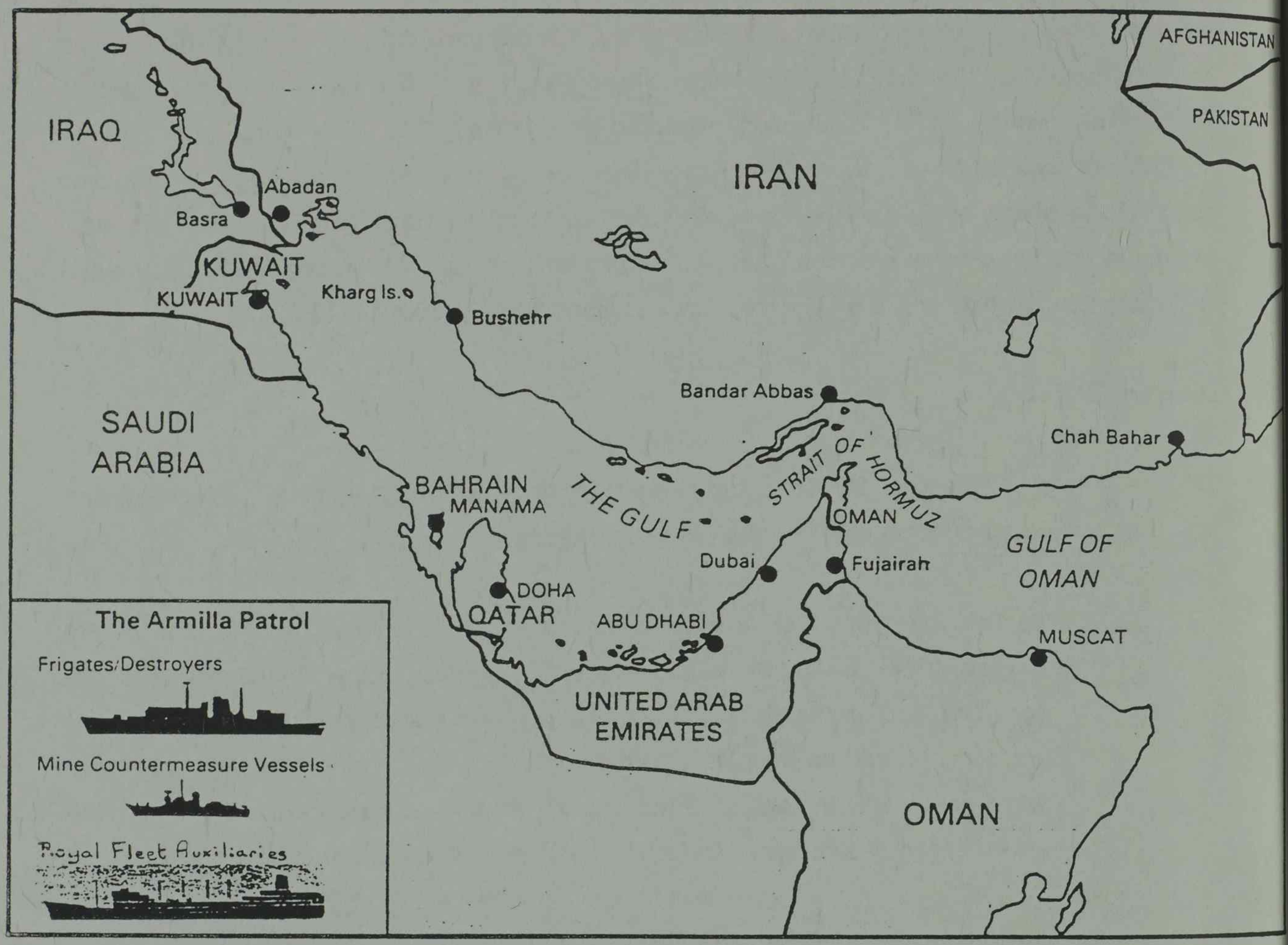
Disaster Relief

338. During 1987, the Services continued to provide disaster relief overseas and assistance to local communities in the United Kingdom:

- In the aftermath of the October gales in southern England, the Army helped local authorities and water and electricity boards to restore services and clear debris. Generators and other emergency equipment were provided for hospitals, old peoples' homes and farms until services were restored. In the same month, the Army was also called on to provide an emergency fire service during a strike in West Glamorgan.

- Following Cyclone Sally in January, Queens Gurkha Engineers (QGE) were sent from Hong Kong to work in Aitutaki and Raratonga in the Cook Islands. They helped restore electrical power and repaired damaged roofs. Another team of QGE and Royal Engineers from the United Kingdom was sent to Vanuatu after Cyclone Uma in March, where they rebuilt a number of schools, carried out specialist electrical work and refurbished several government buildings. A Royal Engineer adviser and emergency relief stores were sent to Bermuda in September, to assist the authorities there in the aftermath of Hurricane Emily.

Fig 9 - The Gulf



THE ARMILLA PATROL

[Figure 9]

1. A continuous Royal Navy presence has been maintained in the Gulf and Indian Ocean area since the beginning of the conflict between Iraq and Iran in 1980, although it has featured widely in the news headlines only during the last 18 months.

2. Originally the ARMILLA patrol consisted of two warships (destroyers or frigates) with a support ship. Last year, however, attacks on neutral shipping in the Gulf increased, in turn stepping up the threat faced by British merchantmen in the area. A third warship was therefore assigned to the patrol in early 1987, to enable it to respond more flexibly to events in the region. At any one time, six destroyers or frigates are now either on patrol, on passage, or working up prior to deployment; this represents approximately one-eighth of all Royal Navy destroyers and frigates, or about one-sixth of those vessels normally available for routine peacetime deployments.

3. The United Kingdom is strictly impartial in the conflict between Iran and Iraq. The ARMILLA patrol provides discreet, low-profile reassurance and, where necessary, protection to merchant ships owned or registered in the United Kingdom or British dependent territories. Its presence also underscores the principle of freedom of navigation in international waters.

4. ARMILLA's operations are not provocative and are designed to reduce tension; but the Royal Navy warships engaged in this task are well prepared to exercise their right of self-defence, both for themselves if attacked, and for merchantmen under their protection. In addition, ARMILLA ships provide humanitarian assistance, in accordance with international law, to any distressed or damaged vessels, regardless of nationality, when human lives are at risk.

5. ARMILLA accompanies most British merchant shipping through the most threatened areas, the southern Gulf and the Strait of Hormuz, which are also the main areas of British shipping activity. During 1987, over 400 merchant ships were assisted in this way. No British merchant vessel has been attacked while in company with the patrol.

6. The discovery of mines in hitherto safe waters off the United Arab Emirates last year posed new dangers both to British merchant shipping and to the warships of the ARMILLA patrol. In consequence, it was decided to deploy four Hunt class mine countermeasures vessels (MCMVs) to the Gulf, together with their support vessels, in support of the patrol. In the first three months after their arrival in September, they located and destroyed ten mines, which would otherwise have posed a threat to shipping of all nationalities. In February 1988, it was decided in the light of the experience gained that the number of MCMVs in the Gulf could safely be reduced to three.

7. The Government welcomed last year's decisions by France to increase its naval presence in the area, and by Belgium, the Netherlands and Italy to send their own naval forces, including MCMVs. Luxembourg is contributing financially to the Belgian and Dutch mine-clearance force; and the Federal Republic is providing ships to substitute for those of other European nations that have had to be diverted from the Mediterranean.

8. While each nation retains control of its own ships, the Royal Navy maintains a regular exchange of information with all friendly navies operating in the region. We have agreed to provide logistic support, and in certain circumstances protection, to the Dutch and Belgian forces, which are acting jointly and with which we have developed a

particularly close working relationship. The Royal Navy has worked alongside the Belgian and Dutch navies in a successful mine-clearance operation off Qatar, and with the French and Italian navies in equally successful operations off Fujairah.

9. This European effort, which has been welcomed by the United States, is partly the result of close and continuing consultations under the auspices of the WEU (see paragraph 114). Unanimous endorsement within this forum of the need for concerted action to help maintain freedom of navigation in the Gulf area has led to the most practical example yet of coordination by European navies outside the NATO area in peacetime.

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TABLE 4 MAJOR EXERCISES IN 1987

Name	Date	Type	Location	Service	Other Countries
ARCTIC WARFARE TRAINING	January-March	Theatre Training	Norway	RM/Army	Netherlands
CARIBTRAIN	January-April	Maritime	East Atlantic Caribbean	RN	France, Netherlands, United States
GREEN FLAG	February-April	Tactical Flying	USA	RAF	United States
WINTEX-CIMEX	March	Command Post	NATO-wide	Tri-Service	NATO
COLD WINTER 87	March	Field Training	Norway	Tri-Service	Netherlands, Norway
PURPLE WAVE 87	March-April	Command Post	UK Waters	Tri-Service	
WESTERN VORTEX	April-October	Tactical Flying	Canada	RAF	
ARDENT GROUND	April-May	Field Training	UK	Army/RAF	Belgium, Federal Republic of Germany, Italy, Luxembourg, Netherlands, United States
MEDICINE MAN	April-November	Field Training	Canada	Army	
MAPLE FLAG	April-May	Tactical Flying	Canada	RAF	Canada, United States
DRAGON HAMMER	May	Maritime/Air	Western Mediterranean	RN/RM/RAF	France, Italy, Netherlands, Turkey, United States
CENTRAL ENTERPRISE	June	Tactical Flying	NATO Central Region	RAF	Belgium, France, Federal Republic of Germany, Luxembourg, Netherlands

AURORA EXPRESS	June	Field Training	Turkey	Army/RAF	Belgium, Federal Republic of Germany, Italy, Luxembourg, Turkey, United States
VENDETTA	June	Submarine Training	Norwegian Sea	RN/RAF	Belgium, Canada, Federal Republic of Germany, Netherlands, Norway, United States
NICKEL MERCURY	June-July	Communications	Caribbean	Army/RAF	
ACCORD EXPRESS 87	August-September	Field Training	Denmark	Army/RAF	Belgium, Canada, Denmark, Federal Republic of Germany, Italy, Luxembourg, Netherlands, United States
OCEAN SAFARI	August-September	Maritime	East Atlantic	RN/RAF	Belgium, Canada, Denmark, France, Federal Republic of Germany, Netherlands, Norway, Portugal, Spain, United States
CERTAIN STRIKE	September	Field Training	Central Region	Army	Belgium, France, Federal Republic of Germany, Netherlands, United States
FINCASTLE	October	ASW Competition	Canada	RAF	Australia, Canada, New Zealand
KEYSTONE	October	Field Training	FRG	Army	Belgium, Federal Republic of Germany
RED FLAG	October-November	Tactical Flying	USA	RAF	United States
JOLLY ROGER	November	Submarine/Anti Submarine Warfare Training	East Atlantic	RN/RAF	
PURPLE WARRIOR	November	Field Training	UK	Tri-Service	

CHAPTER FOUR: PROCUREMENT

EQUIPPING THE ARMED FORCES

401. We plan to spend £8,241 million in 1988-89 on equipment for the armed forces. This represents 43% of the total defence budget, and £1,310 million more in real terms than was spent in 1978-79.

402. This substantial investment makes the Ministry of Defence the largest single customer for the products of British industry, which account directly for about 75% of the equipment budget; another 15% benefits British industry through its participation in collaborative projects and the remaining 10% is spent abroad. Defence procurement supports some 350,000 jobs in the United Kingdom, either directly or indirectly, and thus plays an important role in economic and industrial activity.

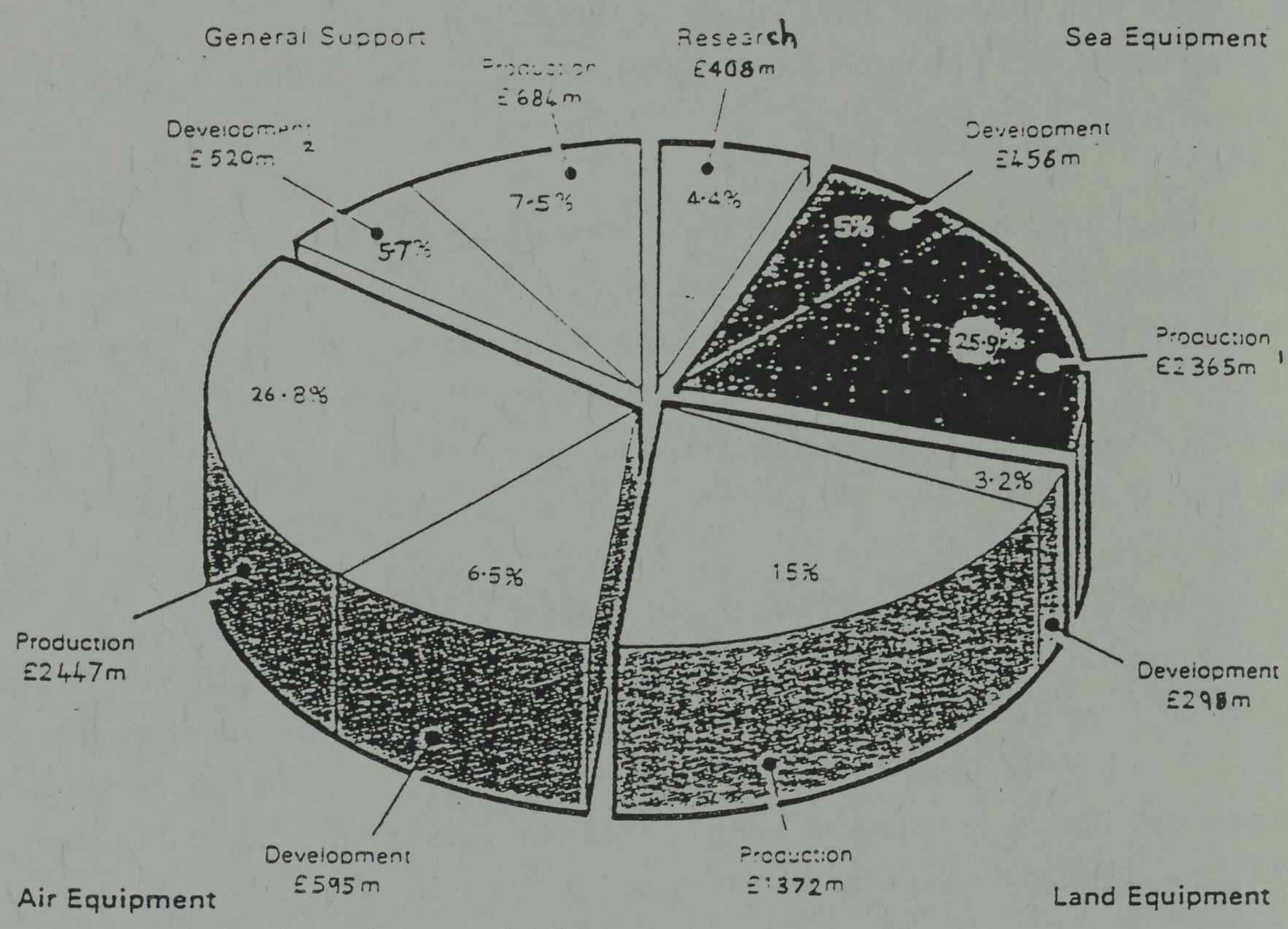
403. Equipment expenditure, while well above the 1978-79 level in real terms, has fallen somewhat from its recent peak. This underlines still further the need to get the best value from the resources available. The strategy we have adopted to this end is described on page [ ]. It has two main components: a more commercial approach to procurement, including improved internal procedures and greater flexibility allowed to industry; and collaboration with allies.

The Commercial Approach

404. Competition is an essential element in this more commercial approach. The proportion by value of contracts let on a competitive basis in 1986-87 was 53%, reflecting a sustained improvement on the 38% of contracts let in this way in 1983-84. The slight reduction since 1985-86 was caused by the incidence of major projects for which no competition at the prime-contractor level was possible, for example the first Trident submarine. But the total value of work placed competitively, at £3,578 million, was the highest ever; and there was also substantial competition for sub-contracts. Equally significantly, the value of contracts let on the basis of cost plus a percentage profit fell from 9% in 1985-86 to 7% in 1986-87; and each such contract is now subject to a cost ceiling.

405. This approach is continuing to reduce costs and encourage innovation. For example, during the last year:

Figure 10 The Main Divisions of the Procurement Programme 1988-89



Notes

[1] Including the cost of equipment for dockyard services.

[2] Including the cost of some HQ staff who are responsible for both research and development.

- in the procurement of **sea systems,** batch ordering and competition are together driving down costs. Last July an order was placed, after competition, for four single-role minehunters at some 10% below the expected cost. Competition, together with the exploitation of modern cost-effective technology, has enabled us to achieve considerable savings in sonars: Sonar 2074, in particular, is being procured at about one-third the cost of the equipment it is replacing. A similar approach combined with economies of scale has led to savings of some 40% on the through-life costs of the communications system for the Type 23 frigate; and competition saved 30% in the cost of ships' compass transmitting equipment compared with the best previously quoted price.

- In the **land systems** area, we have achieved savings of 40% in the unit production cost of the second batch of the S10 respirator. Competition for the latest order for tank thermal-imaging systems produced 20% savings against previous budgetary estimates. And the contract for an air defence simulator showed savings of 40% against other tendered prices.

- In the **air systems** area, a recent competition for Harrier GR5 airframe fatigue testing resulted in a saving of nearly 70% on the earlier budgetary estimate. In a competition for the supply of the Tucano trainer aircraft simulator, the winning tender was more than 40% lower than originally estimated. Another competition, for a Magnetic Anomaly Detection System, showed a saving of 65% on the estimated price. And the winning bid in the recent competition for the supply of the UK Air Command, Control and Information System was about 40% less than the original estimated cost.

These 11 examples alone have brought savings totalling £105 million.

406. The success of this policy has been underpinned by encouraging the widest possible range of companies to compete for our business. This is reflected in a 30% increase in the number of companies seeking registration as defence contractors; and more companies are winning contracts. We have achieved this by working for a wider understanding both of the opportunities available for defence business and of how we conduct it:

- Last year's Statement reported the launch of our **Small Firms Initiative** to introduce ourselves to more companies in this sector of British industry.

The response to the creation of the Small Firms Advice Division in the Ministry of Defence has been encouraging. In the first year of the initiative more than 1,300 companies have sought advice, and demand shows no sign of diminishing. The division has held 26 seminars around the country to explain our procurement policies and, in particular, how small firms can break into the defence market. Over 1,100 companies have attended these seminars, and more are planned. The division has also attended 22 'Meet the Buyer' and other trade exhibitions, where it was approached by over 1,600 companies.

- The **MOD Contracts Bulletin**, launched in September 1986 to announce opportunities to compete at both prime- and sub-contract levels, has been expanded to include details of contracts awarded, offset opportunities for British companies and, occasionally, the requirements of US forces based in the United Kingdom. This is in addition to the advertisement of contracts and tenders valued at £0.5 million or above and opportunities for British companies in the US SDI programme (see paragraph 424). Industry has welcomed the bulletin, and we hope to extend and improve it further in the future.

- A further edition of the booklet **Selling to the MOD** is planned for this year. We have also published a booklet, widely distributed in the defence industry and in the City, outlining the **organisation and aims of the Procurement Executive (PE).**

A list of contractors paid £5 million or more by the Ministry of Defence in 1986-87 is given in Volume 2, Table 2.10.

407. Last year we reported the PE's initiative to make greater use of information technology to help monitor and control programmes. Recent developments have been the procurement of management information systems for the Quality Assurance and Export Services staffs, and an integrated information system for the land systems area. As an interim measure, additional micro-computers have been introduced into the air systems area to assist in the management of finance, project reporting, contracts and project management. The use of information technology in the sea systems area is being steadily expanded and improved. The management information system for senior staff concerned with equipment procurement, TOPMAST, is now available to more staff; and its information base continues to be expanded to include information on major PE programmes.

CHIPS WITH EVERYTHING

1. Just as the microchip has transformed the industrial economies of the globe and the daily lives of its inhabitants, so it is revolutionising warfare. On the battlefield of the future the microchip will be ubiquitous. It will be found in the guidance systems of missiles, torpedoes and the precision-guided munitions fired by artillery; in increasingly capable sensors - advanced radars, other electronic and optical devices, and complex sonars - that give commanders a developing picture of the battle; and in the high-speed secure command and control systems through which commanders communicate their orders. Thanks to the chip, tomorrow's weapons will be more accurately delivered and controlled and will hit their targets more often.

2. The other side of the coin is that each unit of equipment will be more complex; and the technical risk of developing new systems, and the danger of time and cost overruns, is greater. It is now our common experience that weapons systems with a high content of computing and software are typically the ones that present the greatest problems of that sort.

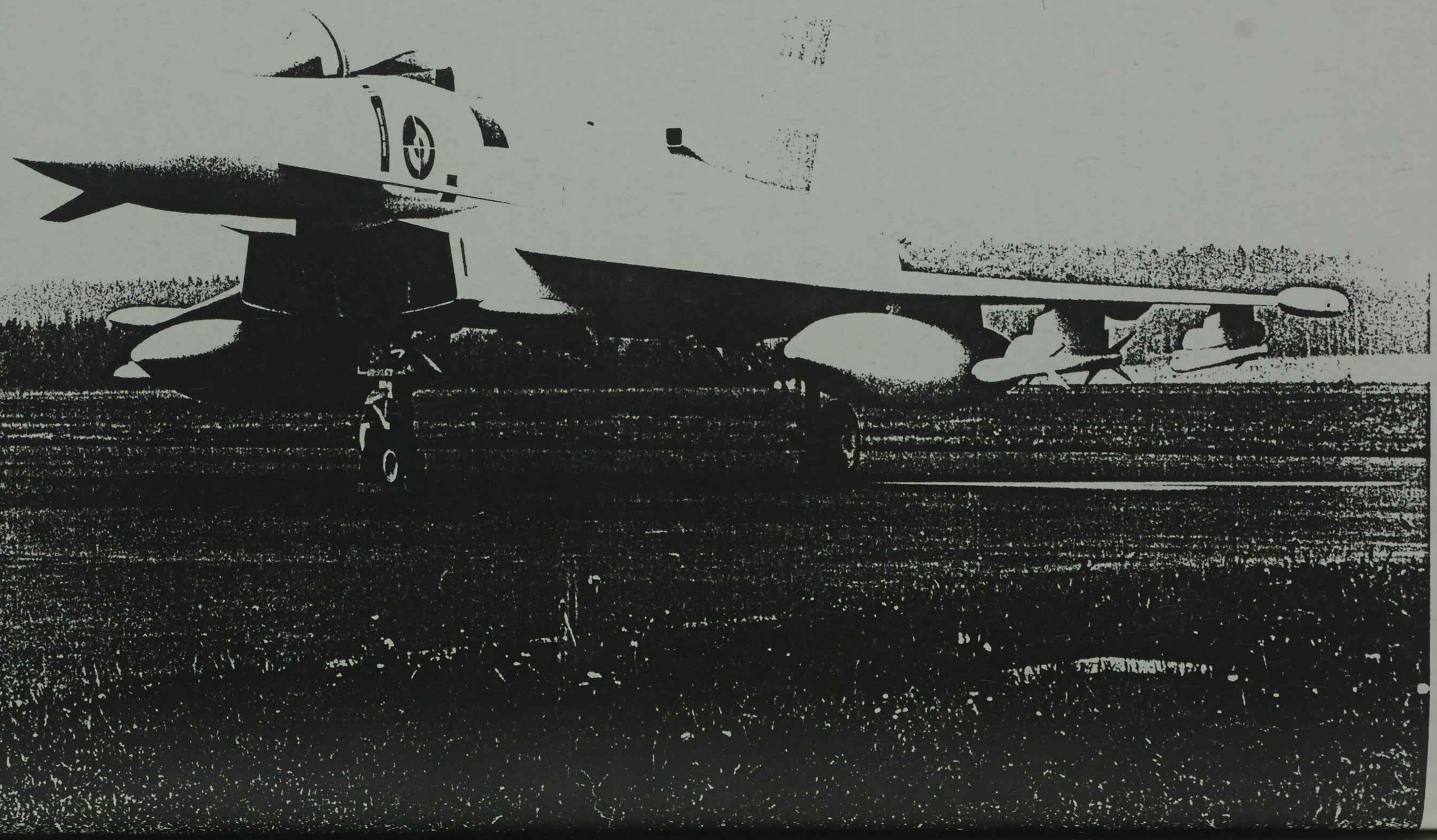
3. We must grasp the opportunities offered by these technologies, for the army, navy or air force that lacks modern weapons is half-way to defeat before it begins to fight. The answer must be to find a way of managing and controlling, and thus reducing, the risks involved.

4. A task group led by the Ministry's Chief Scientific Adviser has examined the common characteristics of software-intensive projects, including those that have failed or run into difficulty in the past. It has produced a code of practice for the guidance of all staffs responsible for the scrutiny, approval or management of such projects. This guidance, a summary version of which will be made available to industry, is now routinely applied to all software-intensive projects that come forward for approval, and is already proving its value. It consists essentially of a series of questions covering the following ground:

- How dependent is the project on software?
- Are the characteristics of the system properly defined and understood?
- Is the nature and the size of the software development task fully recognised?
- Is a proper management structure in place, with the necessary qualified and trained staff?
- Has a comprehensive and realistic implementation plan been worked out and agreed between the contractor and the Ministry?
- Do the software tools and methods that the contractor proposes to use accord with the best practice?

5. There is nothing new about any of these questions. By codifying them in this way, however, we aim to provide, at the outset, the best possible basis for judging whether a software-intensive project is soundly conceived and likely to be capably executed. We are thus building on past experience to ensure that in future each such project will only go ahead when it is established on sound management and technical principles.

8 - Design Mock-Up of the European Fighter Aircraft



Equipment Collaboration

408. We have pressed on with our efforts to achieve value for money through wider and more effective collaboration in equipment procurement. Within the Alliance the main multilateral fora for this activity are the Independent European Programme Group (IEPG), which is responsible for developing cooperation within Europe, and the Conference of National Armaments Directors (CNAD), which promotes the same aim Alliance-wide. The activities of the two are complementary rather than competitive. It is the role of the IEPG to help achieve a more effective European contribution to the Alliance (see paragraph 113) by eliminating wasteful duplication of effort.

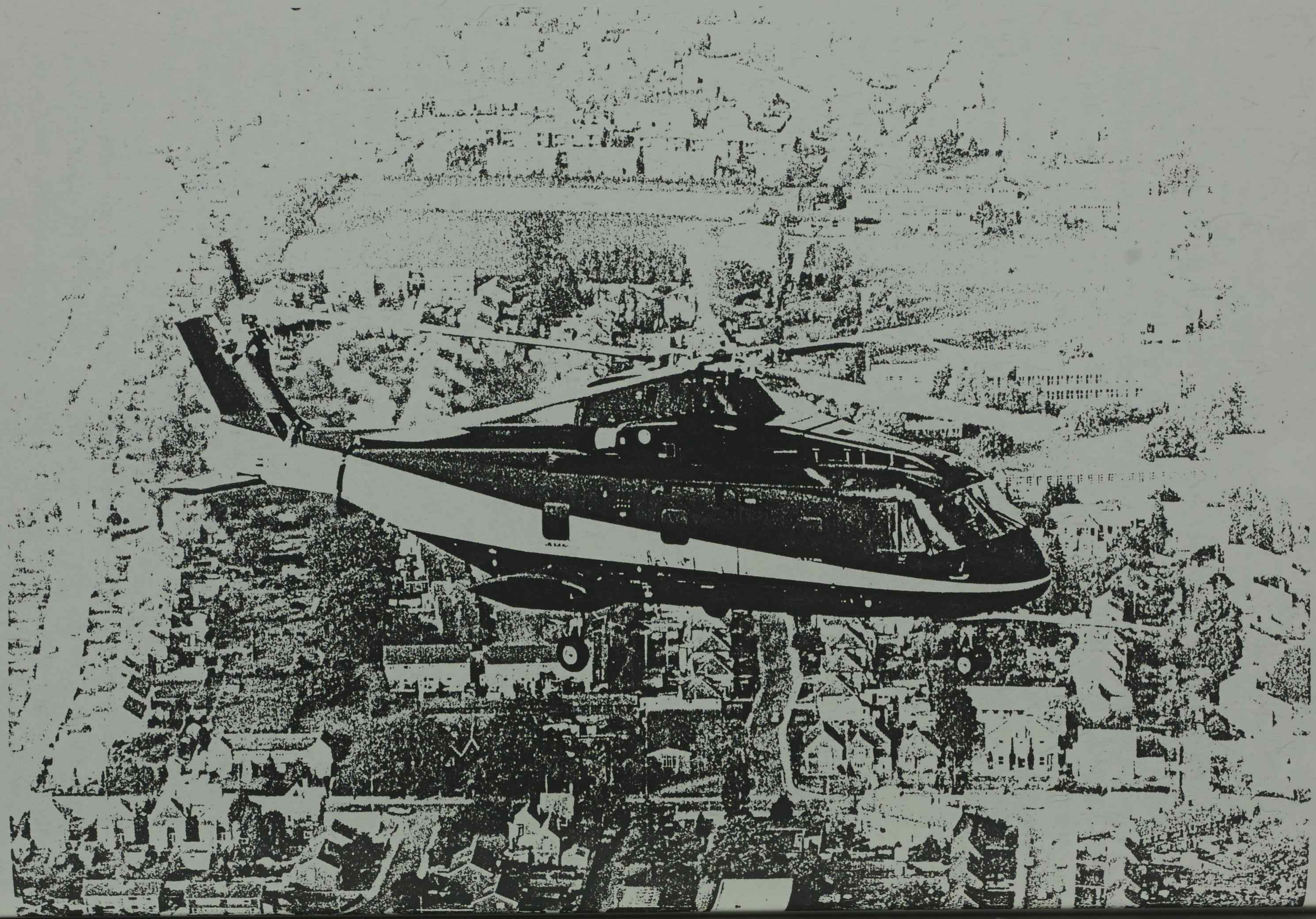
409. Last year we reported the steps being taken by the IEPG to make **European defence industry** more competitive. IEPG Ministers have welcomed the report of the independent study team, which recommended that this aim could best be achieved by opening up Europe's internal armaments market to a much greater degree. They have commissioned an action plan for pursuing the report's proposals and will consider this at their next meeting.

410. Good progress continues to be made in other areas of the IEPG's activities. In the last year, a further two **European staff targets** have been agreed, bringing the total in the past three and a half years to 15; the United Kingdom subscribes to nine of these. Vitally important though harmonised operational requirements and timescales clearly are, the acid test for European collaboration will be the initiation and follow-through of actual programmes based on these agreed staff targets. A useful, if modest, start has been made with the decision to launch a one-year study of the next generation medium-range surface-to-air missile.

411. The need for **collaborative research** in Europe was a key feature of the revitalisation of the IEPG in 1984, and it has been underlined at successive Ministerial meetings. Encouraging progress is being made: 20 cooperative technology programmes are now under way and, of these, the United Kingdom is participating in 17. The IEPG recognises that joint European research has to be more systematic, and considerable efforts are being made to that end, focusing initially on the application of advanced materials and computing.

412. In December 1987, NATO Ministers agreed in principle to create a **Conventional Armaments Planning System** (CAPS). It is intended that the CAPS should encourage cooperation among member countries by providing the armaments community with a

9 - EH 101 on its Maiden Flight Over Yeovil, October 1987



framework within which to analyse national long-term armaments goals and to review how far national plans will meet Alliance needs. Detailed procedures for a two-year trial of the CAPS are now being drawn up by CNAD.

413. CNAD also continues to be the focus for collaboration in response to the **Nunn Amendment,** which has set aside funds from the US defence budget for collaborative research and development. In the last year the United Kingdom has signed four further Memoranda of Understanding (MOU) for such projects, including one for the development of the Question and Answer component of the NATO Identification System.

414. Table 5 provides a list of collaborative equipment currently in service or projects at various stages of development or study. Production of Harrier GR5 is continuing, as are deliveries of the Tornado aircraft (see paragraphs 315-316). Flight testing for the development of the Anglo-Italian EH 101 helicopter has been under way for six months. Good progress has been made on the evaluation of the results of the project definition phase of the European Fighter Aircraft project and on the negotiation with industry of the contractual terms that would govern full development. We announced in January this year our decision to participate in the project definition phase of the NATO Frigate Replacement for the 1990s (NFR 90), subject to the realistic and proper alignment of timetables for the ship and weapon system programmes at an early stage. We are also taking part in two new studies to identify future naval anti-air warfare missile systems. [And we are now proceeding to full development of the Third Generation Anti-Tank Guided Weapon (TRIGAT) with our French and German partners.]

415. A new initiative was launched in 1987, when the first **Anglo-French Defence Equipment Conference** was held at Lancaster House; senior officials and industrialists met to exchange information on future requirements. The first conference focused on land systems. A similar event dealing with sea systems was held in March 1988, and one covering air systems is planned for later this year. French and British Defence Ministers endorsed this initiative when they met in December 1987. They also announced the establishment of a joint committee of officials to oversee arrangements to publicise contract opportunities in France and the United Kingdom in order to encourage purchases of each other's equipment.

THE TRIDENT PROGRAMME

1. It is now six years since the Government decided to replace the British Polaris force with another four-submarine force armed with the Trident II D5 strategic weapon system, and the programme remains on course for entry into service in the mid-1990s. At average 1987-88 prices and at an exchange rate of $1.62 to the pound (the rate used, by convention, for this year's recosting of the defence programme), the cost of the programme is estimated at £9,043 million; this represents a fall in real terms of £1,038 million compared with the original 1982 estimate. The cost of those elements of the programme to be procured from the United States is currently estimated at some 36% of the total.

2. The construction of the first two submarines, HMS Vanguard and HMS Victorious, is going well; and they are due to begin trials in the early 1990s. When orders for the remaining two boats have been placed and the programme reaches its peak, in 1990, it will be providing some 27,000 jobs in this country.

3. The development of the Trident D5 missile in the United States is on schedule. The test flight programme has, to date, achieved a very high level of success; test firings from submarines are planned to begin in Spring 1989.

4. The construction programme at the Clyde Submarine Base in Scotland, where the Trident submarines will be based, is one of the largest in the United Kingdom. In the past year asbestos clearance from the Faslane site has been completed, as has a large programme of site preparation at the Royal Naval Armament Depot (RNAD), Coulport. Three new roads are now open, diverting construction traffic from local towns and villages. Contracts have been let for a ship-lift, to enable the submarines to be serviced out of the water, and for the construction of the explosives area and a generating station. Tenders have been invited for a floating jetty at the RNAD, and a start has been made on the refitting facility at Rosyth.

5. The latest estimate of the capital savings achieved by having Trident missiles serviced in the US facility at King's Bay, Georgia, rather than in the United Kingdom is some £770 million. In addition, this arrangement will save running costs throughout the life of the programme. Missiles (but not their British-manufactured warheads) will be sent to King's Bay after every seven or eight years of deployment, and replacements will be taken into service. These arrangements, reached in 1982, in no way affect the independence of our deterrent, which, with its British warheads and British-owned missiles, will remain at all times under the control of the British Government.

DEFENCE RESEARCH

416. A total of £403 million has been provided for defence research in the defence budget for 1988-89. This represents about 2% of the total budget and some 4% of planned expenditure on equipment procurement (see paragraph 401).

417. Last year's Statement recorded the Government's concern to ensure that defence does not pre-empt an excessive share of the nation's technological resources. To that end we continue to pay very close attention to the real level of defence

research and development (R&D) expenditure, the aim being to achieve a gradual reduction over the next decade. This will involve looking very carefully at what is available off the shelf and at the opportunities for international collaboration, before embarking on major new programmes. There will, however, be no abrupt change; the Ministry of Defence will continue to fund R&D in industry on a substantial scale.

418. The last year has seen further notable achievements by the defence research establishments:

- three Queen's Awards for Technological Achievement have been shared with industry: The **Royal Signals and Radar Establishment** (RSRE) and the English Electric Valve Company won two, for improvements to thermal-imaging cameras and work on image intensifiers; and the **Royal Aircraft Establishment** (RAE) shared an award with GEC Avionics for work on night-vision technology for aircraft.

- **RAE's** development, with Alcan International, of aluminium lithium alloys, which are both stiffer and lighter than other such alloys, is being successfully marketed, particularly in North America; and RAE's development, with Westland Helicopters, of advanced rotor systems is being exploited in the development of EH 101.

- The Viper high integrity microprocessor, based on **RSRE** research, was launched as the first such system to be made available commercially; it is ideally suited to applications where safety is critical, as in road and rail traffic control and avionics.

- The **Admiralty Research Establishment** has developed special equipment for the detection, avoidance and disposal of mines, for use by the Royal Navy's MCM squadron in the Gulf.

- Successful research at the **Royal Armament Research and Development Establishment** into low-cost techniques of chemical synthesis has shown the potential for application of similiar techniques in the fertiliser and pharmaceutical industries.

- Research carried out at the **Chemical Defence Establishment** (CDE) into gas and aerosol detection has led to the development of technology for environmental control in hospital operating theatres; and CDE research into microbiological defence has led to a new design of hypodermic syringe, already being used in the civil sector, which reduces the risk of injury.

These five research establishments, and the Aeroplane and Armament Experimental Establishment at Boscombe Down, are being considered, as a group, for possible agency status under the Government's plans for improving management in the public sector (see paragraphs 510-511).

419. We remain committed to harnessing the capabilities of the defence research establishments for the benefit of the wider economy. Defence Technology Enterprises Ltd (DTE) is now well established in its role of encouraging private industry to exploit technology originating in our establishments. It has representatives at four of the larger research establishments, and has attracted over 260 companies as associate members. As a result of its work so far, DTE has arranged 32 licenses or signed options with companies to use Ministry of Defence technology. Substantial additional technology development at a cost of some £5 million has been undertaken by the companies concerned, which are expected to achieve sales worth £40 million over six years from the resulting products. Further licenses are under negotiation. A new development has been the launch, with the Department of Trade and Industry, of the Civil Industrial Access Scheme. This is designed to encourage civil industry to make greater use of the expertise that the defence research establishments can provide through collaborative work, the use of their facilities, and advice and consultancy.

GRUINARD ISLAND

1. 1987 saw the successful decontamination of Gruinard Island (off the north-west coast of Scotland), which had been infected with anthrax spores during the Second World War. After many years when it was thought that decontamination would not be possible, infected areas were treated with a solution of formaldehyde and sea water and sampled, using new techniques, to establish that the remedy had worked.

1 Coastal Survey Vessel	1	-
1 Landing Ship Logistic	1	-
Naval Aircraft		
23 Sea Harrier FRS1	20	3
13 Sea King Mk 5	13	-
4 Sea King Mk 6	-	4
8 Sea King AEW(9)	8	-
24 Sea King Mk 4	21	3
10 Lynx Mk 2/3	10	-

Air Defence Alerting Device To Equip Javelin/HVM	-	All
Infanty Weapons		
332,000 SA80 Small Arms System	48,000	284,000
2,700 51mm Mortar(8)	-	-
Full Operational Stocks of Law 80(2)	Initial Batch	Balance
Other Equipment		
1 Wavell ADP System	1	-
1 Ptarmigan Digital Communications System	Phases 1 & 2	Phase 3
3 Troops Phoenix RPV	-	3
Full Operational Stocks of Full-Width Attack Mine Fuze(2)	Initial Stocks	Balance
Challenger ARRV	-	Initial Deployment
Full Operational Stocks of General Service Respirator (2)	Initial Stocks	Balance
1 Electronic Warfare System	-	1 System

NOTES

1. Platforms only: although accepted into service, completion of trials may still be awaited.
2. Numbers not given for security reasons.
3. Includes 2 prototypes and aircraft number ZD325, lost on 22 October 1987.
4. Deliveries have been temporarily suspended pending the implementation of the accident enquiry recommendations.
5. Excludes 9 VC10 tankers, shown in previous statements, which were ordered before May 1979.
6. Purchase and conversion of second-hand ships.
7. Includes Territorial Army.
8. Equipment currently undergoing modification to achieve improved build standard.
9. Conversions of existing aircraft.

ESSAY

THE CONVENTIONAL BALANCE

1. An accurate assessment of the potential threat is no less important now than it has ever been. History furnishes many examples of military defeat arising from miscalculation of the enemy's strength. Each year we publish in this Statement a particular type of threat assessment, the balance between NATO and the Warsaw Pact of conventional and nuclear forces in Europe. The recent progress of arms control negotiations and the debate on defence policy in this country have served to focus attention on the conventional balance, so it is timely to consider the problems inherent in generating these force-level figures (and hence their accuracy), and whether the message implied by the numbers needs tempering by considerations such as the quality of equipment or its manning.

The Figures

2. As we have explained in past Statements, there are genuine problems in arriving at completely accurate figures. They include:

- **How to decide which forces to count**? The most straightforward approach might, at first sight, be to count each side's total forces world-wide. But a realistic global balance would not only be extremely difficult to draw up, it would also be largely irrelevant to our main concerns. For, short of a full-scale strategic nuclear exchange between the superpowers, any East-West conflict would be fought in Europe - the area that in any event most directly affects our own security. While, therefore, compiling global balances can be an interesting academic exercise, our aim has been to focus as far as possible on the forces that would be most relevant to a war in Europe. That is why this Statement covers not only the forces on the Central Front, which would be involved immediately in any European conflict, but also forces in the whole of Europe from the Atlantic to the Urals, which could be deployed quickly to the Central Front, or which could be involved early in any fighting on the northern and southern flanks.

- **How to count accurately**? The Warsaw Pact has over the years maintained tight secrecy about all aspects of its military forces. For example, it has consistently refused to discuss its own force levels in MBFR negotiations

over the last 15 years, and only last year admitted for the first time to having a chemical warfare capability. Counting its forces cannot, therefore, be an exact science. Large items, such as ships, are easy to count; smaller ones, such as tanks and artillery pieces, less so; while others, such as anti-tank guided weapons, are almost impossible to count accurately. Similarly, it can be relatively easy to identify missile launchers, but not the number of spare (or reload) missiles available.

- **Where to draw the line**? Arbitrary lines have to be drawn between, say, frigates and patrol boats, or tanks and armoured reconnaissance vehicles. Putting a border-line case into one category rather than another could have a significant effect on the resulting balance. Similar problems can be caused by differing interpretations of the readiness states of certain units on both sides, and by uncertainties about where specific units are normally based.

3. There is thus obvious scope for assessments to differ, either because different counting rules have been applied or because interpretations of the available evidence vary. Nonetheless, the figures produced by the most reputable independent bodies present broadly the same picture of Warsaw Pact numerical superiority (although, for the reasons explained above, they may differ in detail).

The Technological Gap

4. It is sometimes argued that Warsaw Pact numerical superiorities can be discounted because they are offset by NATO's technological lead. Certainly the West still has a lead in many areas; but it is being eroded by the continuing deployment of new Soviet weapons with improved flexibility and performance. And, although the West is often ahead in the race to develop technologies, the Soviet Union is often quicker to apply and deploy them, as has been demonstrated by the introduction of explosive reactive armour for tanks, an idea first developed in the West but now widely applied by the Soviet Union.

5. In practice, both East and West design weapons to reflect different needs, resources, and approaches to problems, greatly complicating attempts to compare their capabilities. The Soviet Union, for instance, requires large numbers of rugged and relatively uncomplicated weapons for use by conscript forces, exploiting the bias of the Soviet bloc economies towards heavy engineering; while in the West we seek to exploit our technological strengths to minimise the diversion of manpower from the productive economy to defence.

6. In general, Soviet design philosophy has emphasised three main features:

- **Simplicity.** Simple designs can be durable, cheap, and easy to produce, operate and maintain. But simplicity often also reflects technological lag, and may carry a penalty of lower combat capability, or less flexibility.

- **Standardisation.** Weapon components are, wherever possible, interchangeable, and existing designs and technologies are adapted for new purposes. This approach can be applied in practice because the Soviet Union can impose standard equipment on its Warsaw Pact allies.

- **Evolution.** The Soviet Union often adopts an evolutionary approach to weapon development; the Kalashnikov assault rifle, for example, which was based on a wartime German design, has evolved by stages into the essentially similar but modern AK-74. By contrast, the West's approach has been to introduce new models, each representing a distinct new generation of technology.

7. The most critical Soviet weakness lies in the electronics sector. Here the inability to produce enough high quality micro-electronic components not only limits the technology that can be incorporated in new weapon systems, but has also inhibited the exploitation of automated design and manufacturing techniques. The West also leads in a number of other key technologies, including electro-optical sensors (such as infra-red), robotics, signal processing, telecommunications (including fibre-optics) and signature reduction (stealth). The Warsaw Pact is roughly equal to the West in aerodynamics, conventional and nuclear warheads, and directed energy (lasers); and it is catching up in fields such as guidance and navigation, new materials, propulsion, radar sensors and submarine detection. The Soviet Union is probably ahead of the West in specific charged-particle devices, some areas of high-energy physics, the use of titanium for submarine construction, and the development of mobile ground-based long-range ballistic missiles.

8. The Western technological challenge has led the Soviet Union to increase the planning priority given to science and technology, to remove bureaucratic barriers between research, development and production, and to collect Western military technology through its intelligence and trading agencies. Technology transfer from West to East has helped it to reduce development costs and allowed it to respond rapidly to Western technological improvements. In the paragraphs that follow we look at the implications of this approach in key equipment areas. We have concentrated on

ground and air forces to the exclusion of naval forces, because the former are the areas of offensive capability addressed in conventional arms control negotiations.

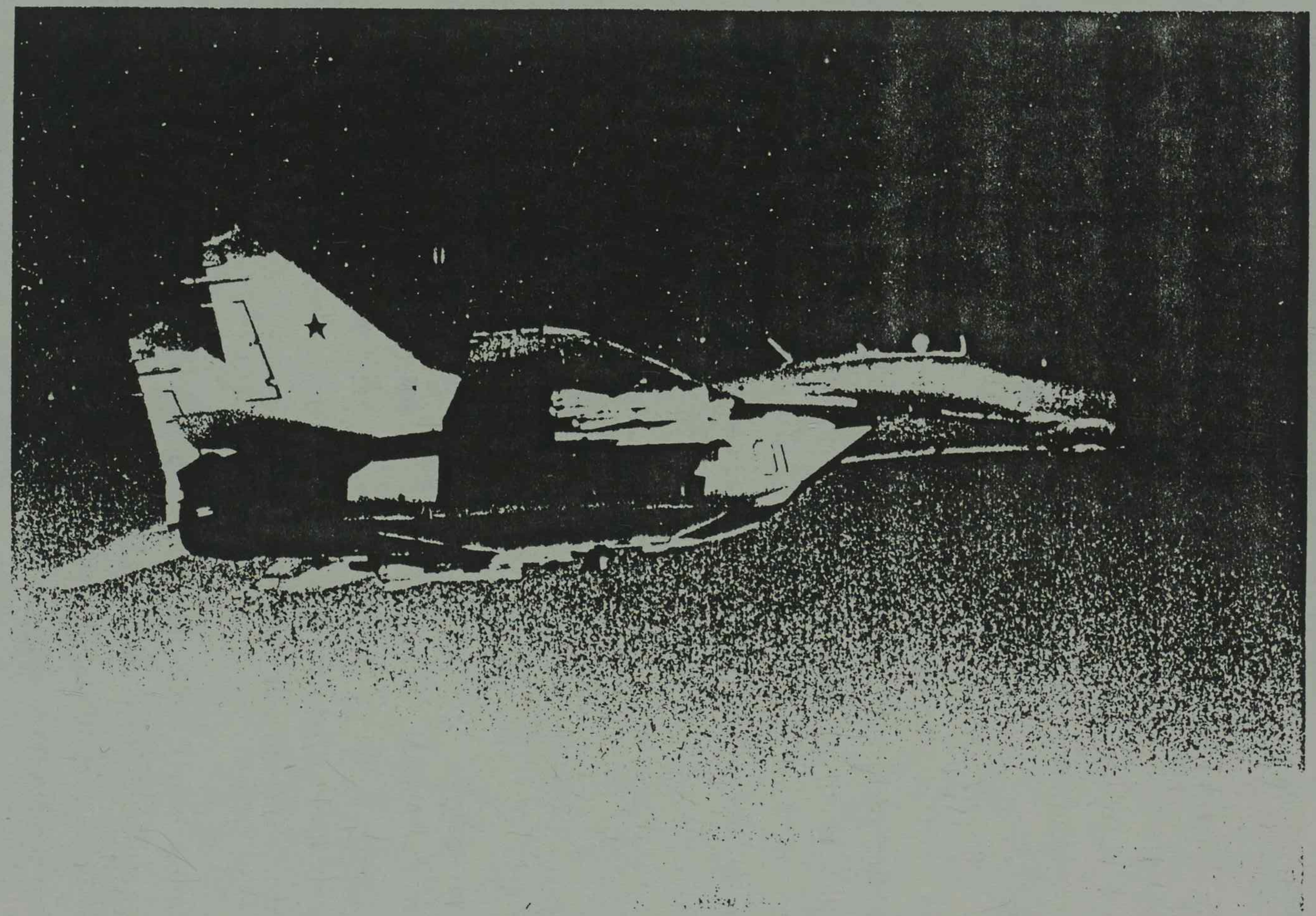
The Quality of Equipment

9. The complexities of comparing the capabilities of specific equipments are well illustrated in the case of **tanks.** Both the Warsaw Pact and NATO have a large variety of different tank models in service; this, together with differences in design philosophy, makes comparisons difficult. It would, however, be untrue to claim that NATO has an advantage in the quality of its tanks across the board. This may have been true in comparison with some of the older Soviet tanks, such as the T-55 or T-62, when they were introduced. But many of these have been modernised and upgraded with new gunnery control systems, and improved ammunition and armour, which enable them to fulfil a useful role on the battlefield.

10. Modern Soviet tanks, the T-64A, T64B, T-72 and T-80, are as capable as the latest NATO tanks, the M-1 (US), Leopard II (FRG) and Challenger (UK). Their armour, supplemented by explosive reactive armour, provides protection comparable to and often higher than that of Western tanks. They have a 125mm gun, a larger calibre than those mounted on NATO tanks; and the T-64B and T-80 can fire anti-tank missiles through the gun barrel. This may give Pact tanks a slight edge in fire power, but it needs to be set against a continued NATO lead in gunnery control, target acquisition and night vision systems.

11. Of the 17,000 Warsaw Pact tanks on the Central Front (see Figure 15), over half are of the modern types - that is, more than the <u>total</u> number of NATO tanks in the area. Among the Soviet forces in the German Democratic Republic, the proportion of modern tanks - 6,000 out of 7,000 - is even higher. If the comparison is extended to include Europe from the Atlantic to the Urals (See Figure 16), the Warsaw Pact retains the advantage: more than half of the 50,000 Pact tanks deployed there are modern, compared with NATO's total of 17,000 tanks.

12. The Warsaw Pact's superiority in **artillery,** in quality as well as quantity, is not seriously disputed. Its 3:1 advantage on the Central Front reflects both the Soviet army's historical emphasis on firepower in its operational doctrine, and its determination to produce purpose-built mobile artillery systems for all formations from Front down to Regiment. The total figures for the Central Front include over 4,000 2S-1 (122mm) and 2S-3 (152mm) self-propelled guns deployed with Warsaw Pact forces, compared with a NATO holding of about 1,900 generally older and less capable guns in the same category. And, while the West probably still enjoys an advantage in the range



11 - Soviet Mig 29 Fighter (Codenamed Fulcrum)

of its medium guns and howitzers and retains its lead in terminally-guided sub-munitions, improvements in Warsaw Pact ammunition over the next few years are likely to reinforce still further the effect of the Warsaw Pact's numerical superiority, both by improving the sustainable rate of fire per barrel and by increasing lethality.

13. NATO's introduction of the 12-tube Multiple-Launch Rocket System will narrow the gap to some extent. NATO plans to deploy about 750 of these systems and the programme is now under way (see paragraph 606). But the Warsaw Pact has some 1,500 such systems already in service on the Central Front, including the most modern 16-tube 220mm BM-27.

14. The Warsaw Pact has also been improving its **air forces.** For example, hundreds of the latest generation of Soviet fighter aircraft, the Flanker and Fulcrum, have been brought into service over the past few years, and they are broadly comparable with the US F-15, F-16 and F-18 aircraft. In technological terms, the West still has a lead of about five years, but the gap is closing. The new aircraft represent a major increase in capability when compared to their predecessors; they are equipped with look-down/shoot-down radar and improved missiles.

The Quality of Men

15. The superior training of NATO's armed forces is often cited as an important counter-weight to the Warsaw Pact's numerical advantage; and there is no doubt that one of NATO's strengths lies in the professionalism and versatility of its servicemen. NATO forces have a lower proportion of conscripts in their ranks, and their servicemen are generally better educated and more resourceful.

16. But such comparisons can be misleading. Soviet military doctrine (see page [ ]) does not require the soldier in the field to show initiative, but rather to carry out certain set battle drills quickly and efficiently. Most Warsaw Pact conscripts spend two years (compared to the NATO average of one year) learning to do just that.

17. Warsaw Pact plans are as well rehearsed as NATO's. For 1988, for example, under the terms of the Stockholm Document, the Warsaw Pact declared 22 exercises involving 13,000 or more soldiers, compared with NATO's 12. Major exercises (ie those involving 100,000 or more troops) are rarely held by either side, but both NATO and the Warsaw Pact conduct frequent command post exercises to rehearse their headquarters staffs in the procedures for moving and controlling large numbers of men and equipment in action.

Striking a Balance

18. We have focused so far on the quality of equipment and manpower. But there are other factors that would affect the outcome of any conflict, and where NATO is often at a disadvantage compared with the Warsaw Pact. The free commitment of NATO's 16 members gives the Alliance an innate strength that the Warsaw Pact lacks; but this has been achieved at a price. NATO's command structure is relatively complex, to ensure that all NATO members are involved in important decisions; at the same time the forces committed to NATO retain their national characteristics and are not all tailored to an exclusively European role. In contrast, the command structure of the Warsaw Pact is in effect that of the Soviet Union, offering obvious advantages of command and control and the potential to react quickly to events; unlike NATO, all Warsaw Pact forces are structured, trained and equipped to follow a single clearly defined military doctrine. And the greater diversity of national equipments deployed by NATO forces, all requiring their own spares and logistic support, could create operational problems for the Alliance not shared by the Warsaw Pact.

19. Nor is geography on NATO's side. Unlike the Warsaw Pact, the Alliance with its limited territory cannot trade space for time in order to concentrate its forces against an attack. The Pact's supply lines for men, equipment and materiel are relatively short and overland, compared with NATO's reliance on transatlantic reinforcement (see page [ ]). And not least, by committing itself never to be the first to use force, NATO has eschewed the military advantage that the initiative confers. A potential aggressor can select the time and place of his attack and mass his forces to achieve overwhelming local superiority in numbers, while a defender can only seek to respond before his defence is irretrievably disrupted.

20. Qualitative factors such as those discussed in this essay are scarcely susceptible to objective measurement; and attempts to produce statements of the balance weighted to take such considerations into account rarely command universal approval. Their implications for our assessment of the threat facing NATO must therefore be a matter of judgement. But those who argue that we can afford to discount the numerical superiority of Warsaw Pact forces do so by looking selectively at those areas where NATO enjoys some qualitative advantage. And judgements about relative quality are often exaggerated: older Warsaw Pact tanks, for example, are more easily written off on paper than on the north German plain. A more balanced view would be that qualitative factors, as this essay illustrates, are often a matter of fine distinctions, and that they work both ways since, in any conflict, NATO would suffer from significant disadvantages compared with the Warsaw Pact. So, although we must take quality and

similar considerations into account, it is a false and dangerous delusion to discount the reality of the numbers.

CHAPTER SIX: THE FORCES OF EAST AND WEST

CONVENTIONAL FORCES

601. The signing of the INF Treaty last December served, once again, to highlight the importance of tackling the disparities in conventional forces in Europe between NATO and the Warsaw Pact. Assessing the conventional balance is a complex task, for reasons explained on page [ ]. But an objective assessment is essential both for determining the defence effort required of the West, and as a prerequisite for the negotiation of conventional force reductions.

602. The conventional forces of France and Spain are included on the NATO side, as indicated, in the comparisons that follow. But these countries do not participate in NATO's integrated military structure.

Land and Air Forces

603. The evidence available to us continues to show a sizeable Warsaw Pact numerical superiority in military force. Figure 15 shows the conventional forces of NATO and the Warsaw Pact in place on the Central Front - that is, NATO forces in the Benelux countries and the Federal Republic of Germany, and Warsaw Pact forces estimated to be in Poland, Czechoslovakia, and the German Democratic Republic. Figure 16 gives a broader picture of conventional forces in place from the Atlantic to the Urals. For the purposes of this Statement, that includes forces located in the 14 NATO countries in Europe, and Warsaw Pact forces in Eastern Europe and the 11 military districts of the Soviet Union west of the Ural mountains.

Developments in Warsaw Pact Forces

604. The continuing modernisation of **ground forces** during the past year has been accompanied by some restructuring. And technological advances have continued to reduce the superiority of NATO equipment (see page [ ]). Deliveries have continued of new equipment such as the T-80 tank and the BMP-2 armoured infantry combat vehicle, which benefit from improved mobility, firepower and armoured protection (including reactive armour in the case of the T-80). There have been increases in holdings of self-propelled artillery, for example the 2S-3, 2S-7 and 2S-9, of tactical surface-to-air missiles (SAMs), and of short-range surface-to-surface ballistic missiles (SRBMs), such as the SS-21 capable of delivering improved conventional warheads with greater accuracy. Recent organisational changes have included some regrouping of

Fig 15- The Current Balance of Forces on the Central Front[1]

NATO		Warsaw Pact
790,000	Total soldiers 1 : 1.22	960,000
580,000	Soldiers in fighting units[2] 1 : 1.24	720,000
8,100	Main battle tanks[3] 1 : 2.1	17,000
7,300	Anti-tank guided weapons[4] 1 : 1.6	12,000
3,100	Artillery[3,5] 1 : 3.22	10,000
1,250	Fixed-wing tactical aircraft 1 : 2.04	2,550

Notes

[1] Covers NATO forces in the Benelux countries and the Federal Republic of Germany, and Warsaw Pact forces estimated to be in Poland, Czechoslovakia and the German Democratic Republic. Includes French forces in the Federal Republic of Germany, which are not declared to NATO, but excludes the Berlin garrison.

[2] Corresponds to a balance of 57 Warsaw Pact to 33 NATO divisions. Warsaw Pact divisions normally consist of fewer personnel than many NATO divisions, but contain more tanks and artillery.

3. Figures for tanks and artillery exclude those in storage.

[4] Crew-served systems and helicopter- or vehicle-mounted systems, but excluding those that may be fired through the gun barrel of Soviet tanks.

5. Figures for artillery exclude mortars.

divisional helicopters, which will improve operational capabilities and give commanders more flexibility in the field. In addition, the Pact's capability for close air support of ground forces has been enhanced by further deliveries of the Hind attack helicopter and the Frogfoot ground-attack aircraft. Hardened command, control and communications systems, together with improved computer data processing and fire-control systems, are now comparable to Western systems.

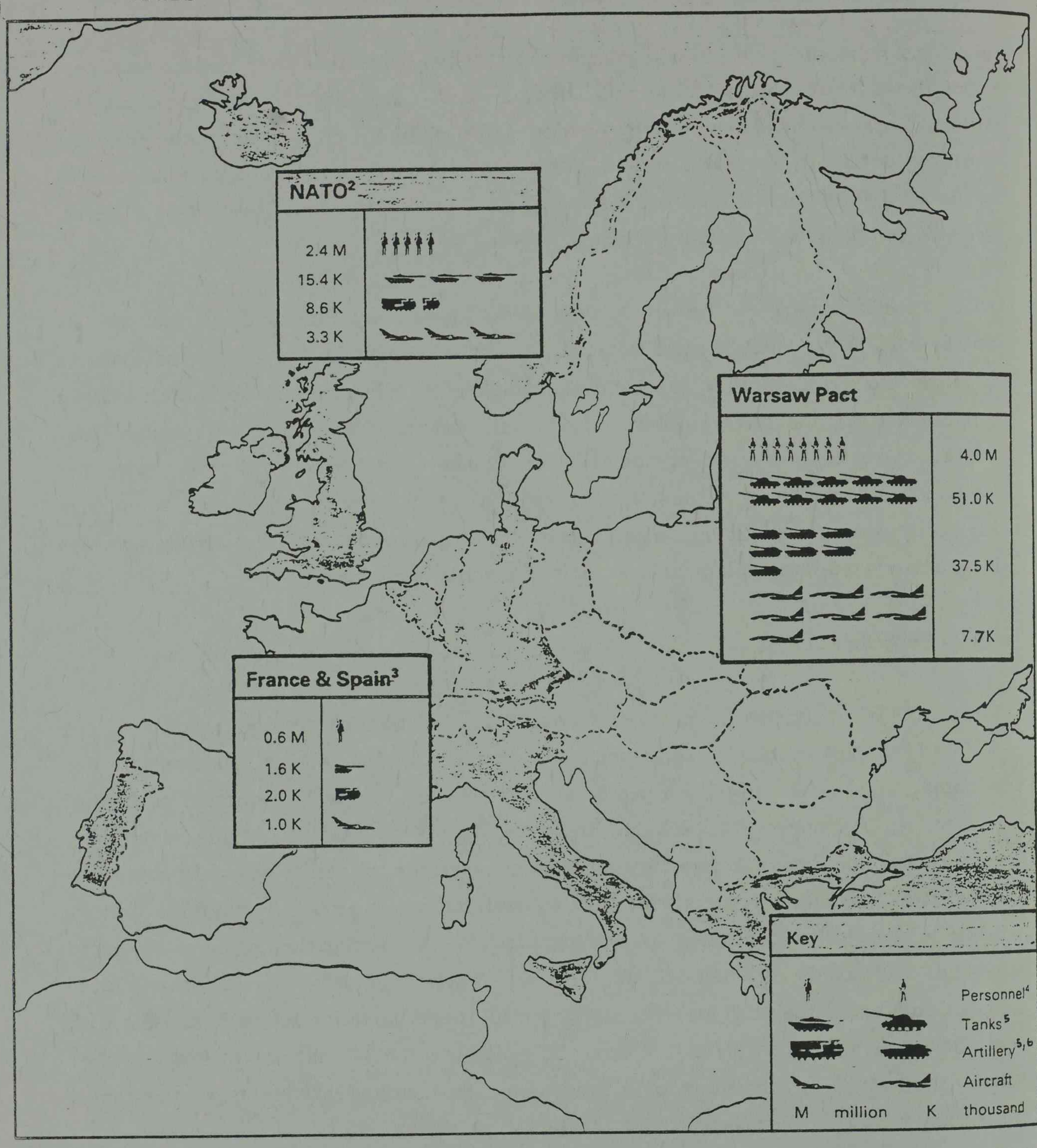
605. Replacement of the **air forces'** older fighters by Fulcrum and Flanker has continued. These modern agile combat aircraft with significantly improved avionics enhance the Pact's ability to conduct deep-ranging offensive air operations and to support ground and naval forces. Soviet air defence capabilities have also been improved markedly by the combination of Flanker and Foxhound fighters with the Mainstay airborne early warning aircraft, which extends Soviet air defence boundaries especially against low-flying targets. New training programmes for aircrews are also being introduced to complement these improvements in equipment.

NATO Forces

606. NATO countries have also introduced new equipment for their **ground forces** during 1987 both through replacement programmes and additional purchases. For example, the NATO tank fleet has been strengthened by the introduction of further Leopard II, Challenger, AMX-B2 and improved M-1 Abrams tanks. At the same time, progress has been made with programmes to enhance the capability of existing tanks by retrofitting advanced fire-control systems and improved armour. NATO infantry's battlefield mobility continues to be upgraded by the acquisition of new armoured vehicles such as the Bradley M2/M3, VAB and Warrior. During the year the United States completed the first stage of fielding MLRS: one battalion for each division with an additional battalion for each corps. Several other NATO nations took delivery of their first MLRS at the start of a programme that will greatly improve the range, accuracy and effectiveness of NATO artillery.

607. The anti-armour capabilities of NATO ground forces are being increased by the introduction of significant numbers of anti-armour guns, anti-armour missile launchers of the Milan and TOW types and enlarged ammunition stocks. Operational and tactical flexibility is being improved by the introduction of more combat and heavy-lift helicopters in direct support of ground forces.

Fig 16- The Current Disposition of Forces - Atlantic to Urals'



Notes

1. For the purposes of this Statement the illustration includes the forces stationed in the 14 NATO countries in Europe, the six non-Soviet Warsaw Pact countries, and the 11 Soviet military districts lying west of the Ural Mountains.

2. French forces in the Federal Republic of Germany are included in the NATO total.

3. France and Spain are members of NATO but do not participate in its integrated military structure.

4. Includes full-time military personnel serving with ground or air forces. Excludes reservists, naval personnel, marines, paramilitary or security forces and uniformed civilian services such as police or customs.

5. Figures for tanks and artillery exclude those in storage.

6. Figures for artillery exclude mortars.

608. NATO **air forces** introduced 200 new combat aircraft during the year in both air defence and ground-attack variants, mostly of Tornado, Mirage and F-16 types. Existing aircraft continue to be updated by the addition of improved avionics and modern weapons such as AIM9L(Sidewinder) and the JP233 runway denial system; aircraft survivability is being enhanced by improved electronic countermeasures and radar-warning systems. In addition to Patriot SAM deployments under way in the Central Region, airfield defences are being strengthened by the introduction of more point-defence SAM systems and hardened aircraft shelters.

WEAPONS PRODUCTION FOR WARSAW PACT FORCES

Estimated Total Production 1977-86 (1)

	Soviet Union	Non-Soviet Warsaw Pact	Total Warsaw Pact	Total NATO
Main Battle Tanks	24,400	4,500	28,900	11,550
Other Armoured Vehicles	42,000	6,800	48,800	19,150
Field Artillery, Mortars and Rocket Launchers	28,200	4,350	32,550	6,550
Tactical Combat and Interceptor Aircraft	8,250	1,150	9,400	6,750
Major Surface Warships	81	24	105	192
Attack Submarines	66	1	67	64

(1) Source: US Secretary of Defense's Annual Report to Congress for the Fiscal Year 1988. French and Spanish production is not included.

1. The high levels of production sustained by Soviet defence industries are necessary to maintain the combat effectiveness of a large standing army, modernise the holdings of strategic equipment reserves and sustain a role as a major arms exporter. Capital investment in the defence industries over the last decade has been running at high levels. But, as in NATO, the cost of developing and producing new weapons is increasing.

2. In the last five years new generation weapon systems have entered production in the Soviet Union, and their increasing complexity and cost have been offset in part by reduced production rates. Production of the latest tactical fighters and newest nuclear-powered attack submarines is below levels previously sustained. Fighter production fell sharply with the decline of the large and long-running Flogger programme, but is now expected to grow slowly as output of the new generation fighters, Fulcrum and Flanker, increases. The overall output of ground forces' equipment, however, is not far short of the long-term average, despite the introduction of new more capable vehicles such as the gas turbine-powered T-80 tank.

3. Weapons production in the non-Soviet Warsaw Pact countries is small compared with the Soviet Union and concentrated mainly on the less demanding designs of ground forces' equipment, minor naval vessels and transport helicopters and aircraft. Even so Poland and Czechoslovakia between them produce many more tanks each year than does the United Kingdom. And their output is increasing now they are producing Soviet T-72 tanks under licence.

Maritime Forces

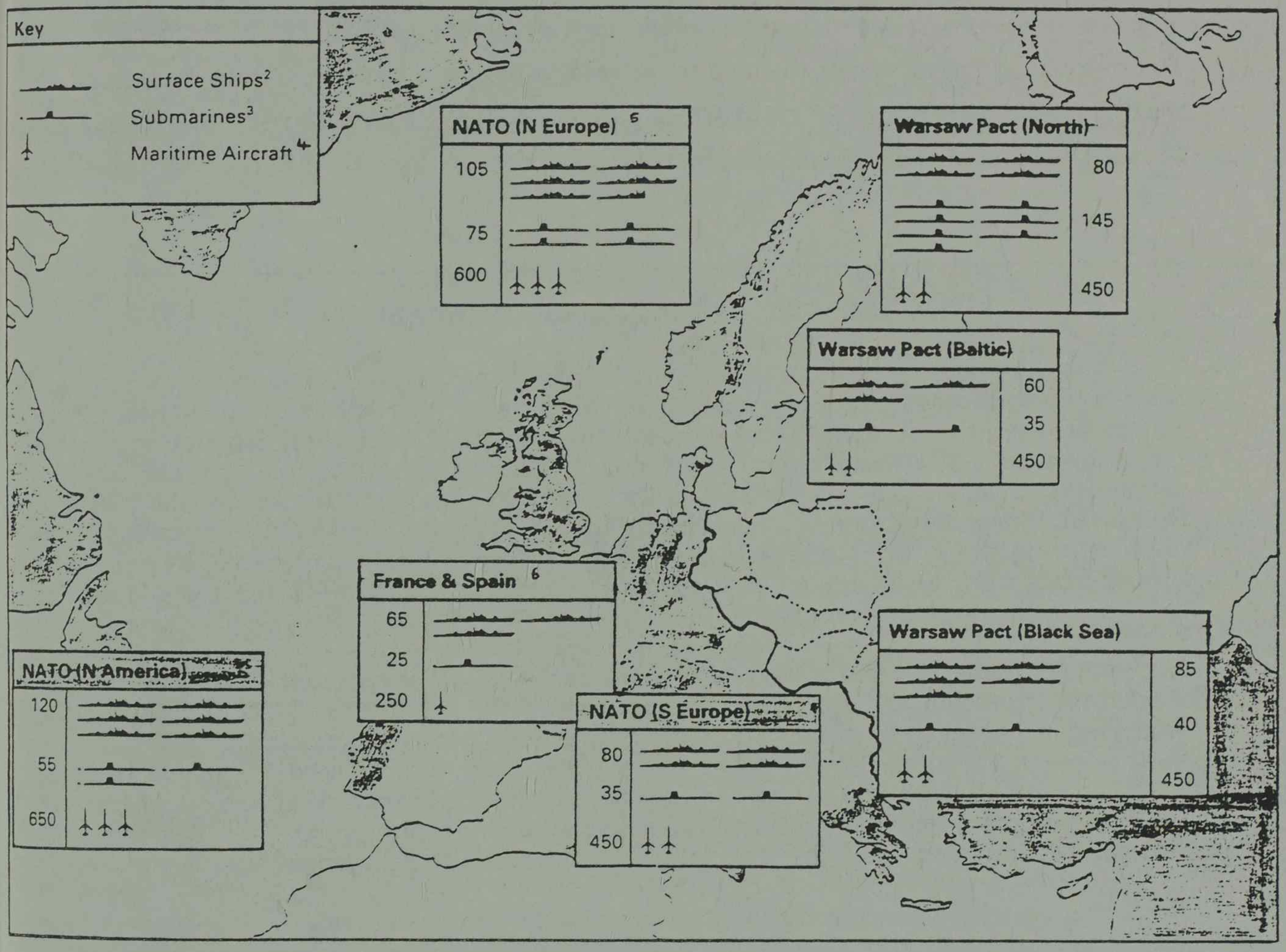
609. Figure 17 shows the principal naval forces of NATO and the Warsaw Pact normally located or based in the North Atlantic and seas bordering Europe. Ships and submarines could be deployed anywhere in this area, but forces have been divided according to sea or fleet areas relating to their home bases.

610. The numerical balance does not, however, tell the whole story. At sea, NATO's mission to protect the Alliance's reinforcement and resupply lines requires proportionately larger numbers of surface escorts, hunter-killer submarines and aircraft than the Warsaw Pact would need to threaten them. The conventional wisdom, applicable to land warfare, requiring an attacker to outnumber a defender is thus reversed. Both world wars have demonstrated the damage that can be caused by a relatively small number of submarines, and the potential threat posed by the Soviet submarine fleet is on a far larger scale than any we have faced before.

Developments in Warsaw Pact Naval Forces

611. Soviet naval deployments away from their home fleet areas have steadily reduced over the last two years, apparently reflecting improved planning to make more effective use of resources. The result has been an improvement in combat efficiency and readiness, and fuller integration of naval forces into combined arms operations. Nevertheless, Soviet naval units continue to be deployed to those parts of the world, such as the Mediterranean and the Gulf area, where the leadership requires Soviet influence or concern to be apparent. The newer Soviet submarines, which are still being completed at an average rate of one every six weeks, are showing clear design improvements over their predecessors, narrowing the technological lead long held by the West; in particular, they are becoming quieter, making detection increasingly difficult. The introduction of new airborne command and control and anti-submarine warfare aircraft should also serve to enhance Soviet maritime capabilities. The strike/attack potential of the Soviet Naval Air Force continues to improve as more variable geometry Backfire bombers enter service.

Fig 17- NATO and Warsaw Pact Principal Naval Forces[1]



Notes

[1] Shows the principal naval forces of NATO and the Warsaw Pact normally located or based in the North Atlantic and seas bordering Europe. Approximate numbers are shown.

[2] Principal surface combatants: frigates, destroyers, cruisers, aircraft carriers, excluding units in reserve.

[3] Excludes SSBNs and units in reserve.

[4] Includes shore-based and embarked fixed- and rotary-wing maritime aircraft.

[5] Includes US forces based in Europe.

[6] France and Spain are members of NATO, but do not participate in its integrated military structure. Their naval forces are divided between the Atlantic and the Mediterranean.

NATO Maritime Forces

612. Significant improvements are being made to NATO's maritime forces through the commissioning of new and more advanced vessels. While the United States continues its force expansion towards the ultimate goal of a 600-ship navy deployed globally, European NATO members introduced new ships and aircraft last year, including two Type 22 frigates, a Meko class guided missile frigate, a Minerva class escort, two Alkmaar class mine countermeasures vessels, a Sauro class submarine and some 25 maritime Tornado aircraft. In addition, there is a continuing programme to upgrade existing vessels, maritime aircraft, and weapons.

RELATIVE REINFORCEMENT CAPABILITY

1. The forces in place on the Central Front (see Figure 15) amount to some 57 Warsaw Pact and 33 NATO divisions, most of them at high levels of readiness. Were war to break out in Europe, therefore, both sides could, if necessary, conduct operations for a short period without being reinforced. The Warsaw Pact, for example, has the capability to launch a surprise attack with its standing forces in the German Democratic Republic and Czechoslovakia: and NATO's forces would counter by implementing the initial stages of its strategy of forward defence (see page [ ]). But, if hostilities were to continue for more than a very few days, both sides would aim to reinforce their in-place forces.

2. NATO plans to reinforce Europe with some 15 divisions from Canada, Portugal, the United Kingdom and the United States, while the units already in place would be increased in strength as reservists became available after mobilisation. NATO forces that, in peace, are based outside the Federal Republic could also be deployed to meet any threat on the Central Front. In addition, although France does not participate in NATO's integrated military structure, some 50,000 French troops are based in the Federal Republic and could immediately be made available to support NATO.

3. The United States has defined its priority aim in reinforcing Europe as being the deployment of an additional six army divisions, and 60 tactical fighter squadrons within ten days. Equipment for these divisions is already pre-positioned in Europe. The remaining reinforcements would arrive in a longer time frame, SACEUR's target being to achieve this within 30 days. Not all these would necessarily be deployed to the Central Front, and some might be required for use outside the European theatre of operations.

4. On the Warsaw Pact side there is a total of some 200 divisions west of the Ural mountains. Of these, in addition to the 57 on the Central Front, there are approximately another 65 in the remainder of Eastern Europe and the most westerly military districts of the Soviet Union, many of which could be brought into action immediately or within a short time; remaining units, west of the Urals, could form a further echelon of forces to back up and exploit attacks already launched by the forces further forward.

5. While not all of these would be used on the Central Front (just as not all of NATO's reinforcements would necessarily go there), a high proportion of these forces would be deployed to that area in wartime. The time taken to do this would vary depending on the levels of readiness of units and their distance from the combat zone. But many divisions are already at very high levels of readiness or capable of being mobilised within a few days; it would take 10-14 days to transport reinforcement divisions to the Central Front from the west of the Soviet Union. All Warsaw Pact forces west of the Urals are positioned within 3,000 km of the IGB. Pact lines of communication are thus shorter and (being overland) safer and faster than NATO's, which stretch twice as far back across the Atlantic Ocean.

NUCLEAR FORCES

Strategic Forces

613. Strategic forces are those whose range or type of delivery system allows them to undertake intercontinental attack. They include intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs) and heavy bombers equipped with bombs and air-launched cruise missiles (ALCMs). For the purposes of this comparison we have used the definition adopted in the SALT II Treaty.

614. Both the Soviet Union and the United States have, over the past year, continued to modernise their strategic forces. At the end of 1987 the **Soviet Union** had deployed about 100 of its mobile ICBMs, the SS-25. Another ICBM, the SS-X-24, which could carry up to ten warheads and is capable of being launched from either silos or mobile launchers, is close to initial deployment. The capability of the Soviet SLBM force continues to improve as more of the new Typhoon and Delta class nuclear-powered ballistic missile submarines (SSBNs) are deployed carrying the multiple warhead SS-N-20 and SS-N-23 missiles. The Typhoon class SSBN is the world's largest submarine and is capable of carrying 20 SS-N-20 SLBMs. Five submarines in this class, and four Delta IV, have been completed so far.

615. The Soviet Union is also developing a range of strategic cruise missiles for launch from ground, sea and air platforms. The AS-15 ALCM is already in service on the Bear H heavy bomber, and about 60 such aircraft are now in the inventory. Deployment of the new strategic aircraft, the Blackjack, could begin before the end of this decade. This aircraft will also be capable of carrying cruise missiles. The SS-N-21 submarine-launched land-attack cruise missile, having a maximum range of over 2,500 km, is now believed to be operational, and the longer-range SS-NX-24 is at an advanced stage of

Fig 18- The Balance of Strategic and LRINF Systems - end 1987[1]

Typical Range: Above 5,500 Km

Strategic Systems Worldwide

USSR[2]

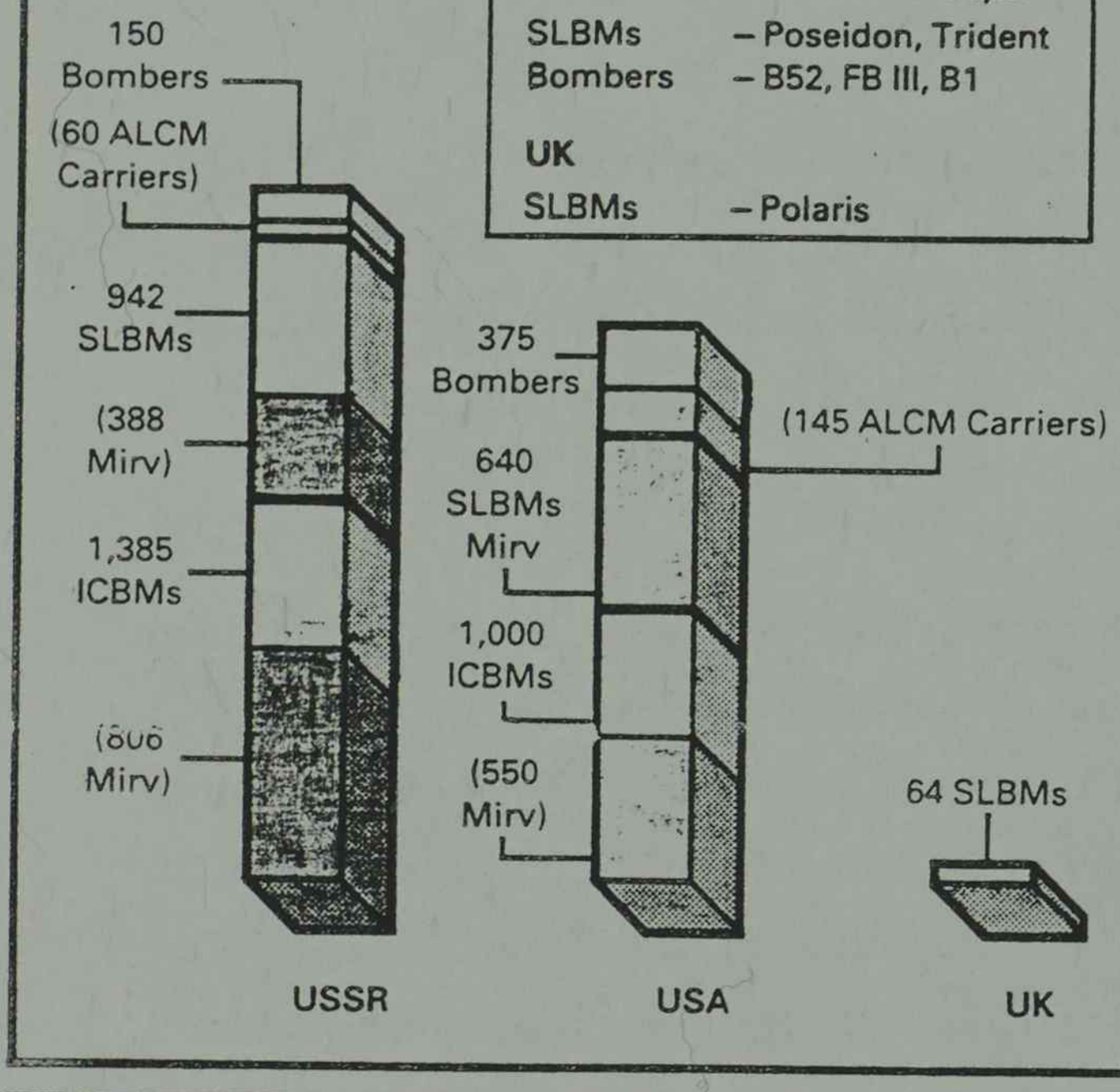
ICBMs	– SS-11, 13, 17, 18 19, 25
SLBMs	– SS-N-6, 8, 17, 18 20, 23
Bombers	– Bear, Bison

USA[2]

ICBMs	– Minuteman II, Minuteman III, MX/Peacekeeper
SLBMs	– Poseidon, Trident
Bombers	– B52, FB III, B1

UK

SLBMs	– Polaris



Typical Range: 1,000-5,500 Km

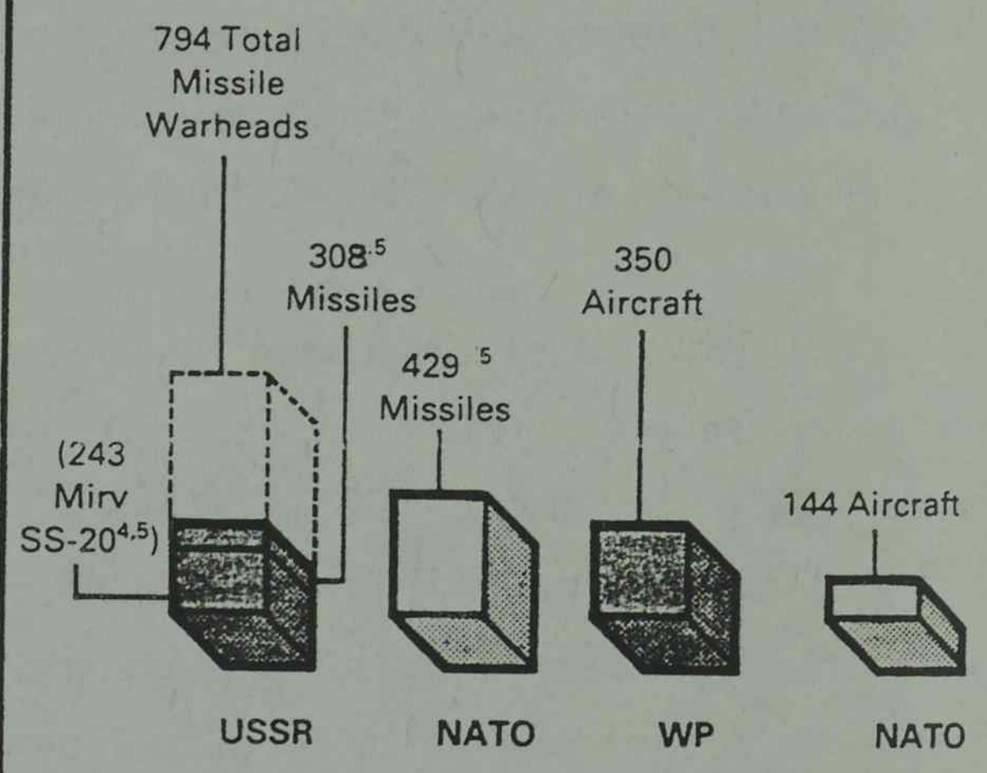
LRINF Systems in Europe[3]

USSR

Missiles	– SS-4, SS-20
Aircraft	– Badger, Blinder Backfire

NATO

Missiles	– GLCM, Pershing II
Aircraft	– F III



Notes

[1] French systems are not included in this diagram. They comprise 96 SLBM, 18 S3 missiles and about 35 Mirage IV Bombers.

[2] The United States and the Soviet Union are also deploying SLCM on a variety of surface ships and submarines.

[3] Includes land-based systems deployed in Europe from the Urals westward: excludes aircraft with a primary maritime role.

[4] Each SS-20 missile has three warheads.

[5] Includes deployed missiles and spare missile bodies at 1 November 1987 according to data contained in the Memorandum of Understanding of the INF Treaty.

development. Although these systems are classified as strategic, they could all be deployed against NATO forces in Europe.

616. The Soviet Union is also continuing to improve its ground-based radars and satellite detection systems in order to enhance its capability for ballistic missile detection and to provide threat assessment information. Part of this programme includes the construction, near Moscow, of a large anti-ballistic missile (ABM) defence radar, as part of the world's only operational ABM system.

617. The **United States'** nuclear posture is similarly based on a combination of ICBMs, SLBMs and long-range bombers. The strategic modernisation programme, announced in 1981, sought to revitalise each leg of this triad. To this end, the United States has begun to deploy the MX, or Peacekeeper, ICBM and the B-1B strategic bomber. Trident (Ohio-class) submarines each carrying the Trident C4 SLBM are now being deployed at the rate of about one a year; eight Trident SSBNs have been launched so far. By the end of the decade, the US SLBM capability will be further improved by the introduction of the D-5 Trident SLBM. B-52 bombers have been modified to carry ALCMs; and the development of an advanced cruise missile and advanced-technology bomber, both based on low-observable or stealth technology, is now under way. Sea-launched cruise missiles (SLCMs) are being deployed on a variety of ships and submarines.

618. Figure 18 illustrates the balance of strategic systems and shows that there is rough parity between the Soviet Union and United States in the numbers of delivery systems. As explained, however, in previous Statements, it is very difficult to estimate the number of warheads actually carried by each system with any accuracy. Interpretation of the balance is further complicated by the asymmetry between the two sides' forces. For example, the Soviet Union places a heavy reliance on its ICBMs and has three times the missile throw-weight of the United States in this category of weapons. It could, therefore, attack all US land-based missiles while keeping part of its ICBM force in reserve. On the other hand, the United States enjoys an advantage in SLBMs which, though less accurate than ICBMs, are virtually invulnerable to a first strike, leaving the United States with the ability to retaliate.

Intermediate Nuclear Forces

619. Intermediate Nuclear Forces (INF) include all systems that fall between short-range (ie battlefield) and strategic forces. They comprise longer-range intermediate and shorter-range intermediate nuclear forces (LRINF and SRINF). LRINF systems

have a range of over 1,000 km, while SRINF systems have a range of between 500 and 1,000 km. Figures 18 and 19 show the numbers of LRINF and SRINF forces as they were at the end of 1987, and include only offensive land-based systems deployed in Europe from the Urals westward. They exclude:

- aircraft and missiles based outside Europe, in the United States and in the Soviet Union east of the Urals;

- aircraft whose primary mission is maritime, such as those of the Soviet naval air forces and NATO aircraft with an anti-ship role;

- NATO sea-based nuclear systems, such as the Terrier surface-to-air missile, the ASROC and SUBROC anti-submarine missiles, air-delivered bombs and aircraft on US aircraft carriers;

- Warsaw Pact sea-based systems, such as SS-N-3, SS-N-7, SS-N-12 and SS-N-19 anti-ship cruise missiles, nuclear depth-bombs, surface-to-air missiles, and SS-N-5 non-strategic ballistic missiles on submarines deployed in the Baltic Sea; and

- air defence systems with a capability against air-breathing nuclear delivery systems. This is an area of massive Warsaw Pact superiority; they have, for example, almost 14,000 SAM launchers compared with NATO's total of about 2,000.

620. The INF Treaty is intended to eliminate globally all US and Soviet ground-launched missile systems in the LRINF and SRINF categories, deployed or otherwise (see Chapter 2). Of these, pending the treaty's implementation, 304 operational US GLCMs are deployed in the United Kingdom, the Federal Republic of Germany, Italy and Belgium, and 108 operational US Pershing II missiles are deployed in the Federal Republic. A number of GLCM and Pershing II spare missile bodies will also be eliminated. On the Soviet side there are 243 SS-20 and 65 SS-4 missiles deployed in Europe, and 247 Scaleboard and SS-23. In addition, the Federal Republic deploys 72 Pershing 1A missiles (with US-owned warheads), which, although not covered by the treaty, will be phased out over the same timescale.

621. It is much more difficult to compare INF aircraft numbers, but the Warsaw Pact has far more dual-capable aircraft than does NATO. Moreover, the Warsaw Pact does not disclose how many of its aircraft are assigned to nuclear operations; we have

Fig 19- The Balance of Shorter-Range Systems with Nuclear or Nuclear-Capable Variants - end 1987[1,2]

Typical Range: 500-1000 Km[3]

SRINF Systems

Warsaw Pact

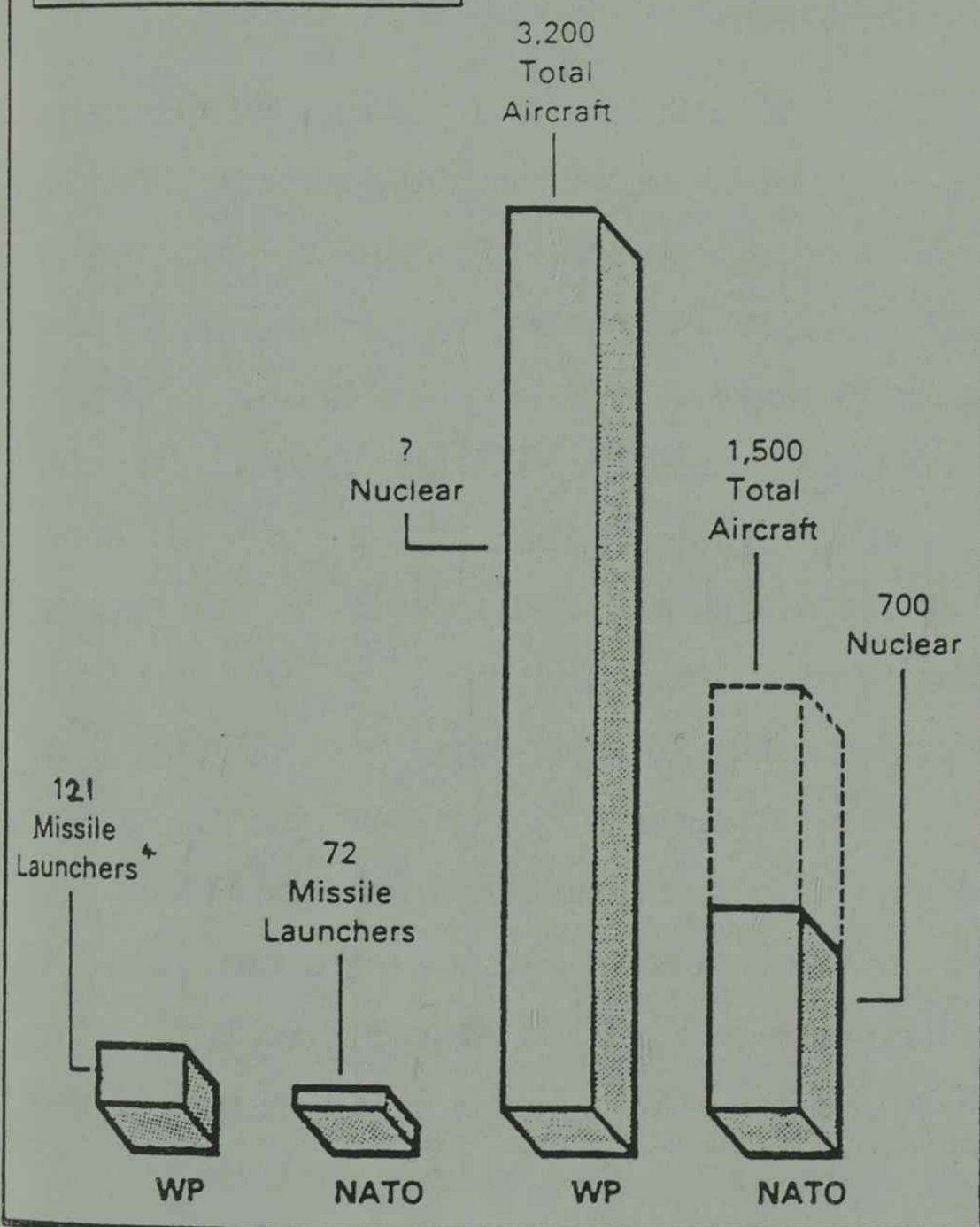
Missiles: SS-23 Scaleboard

Aircraft: Fitter, Fishbed, Flogger, Fencer, Fulcrum

NATO

Missiles: Pershing 1

Aircraft: ~~F4, F104, F16,~~ Tornado



Typical Range: Below 500 Km[3]

Short-Range Systems

Warsaw Pact

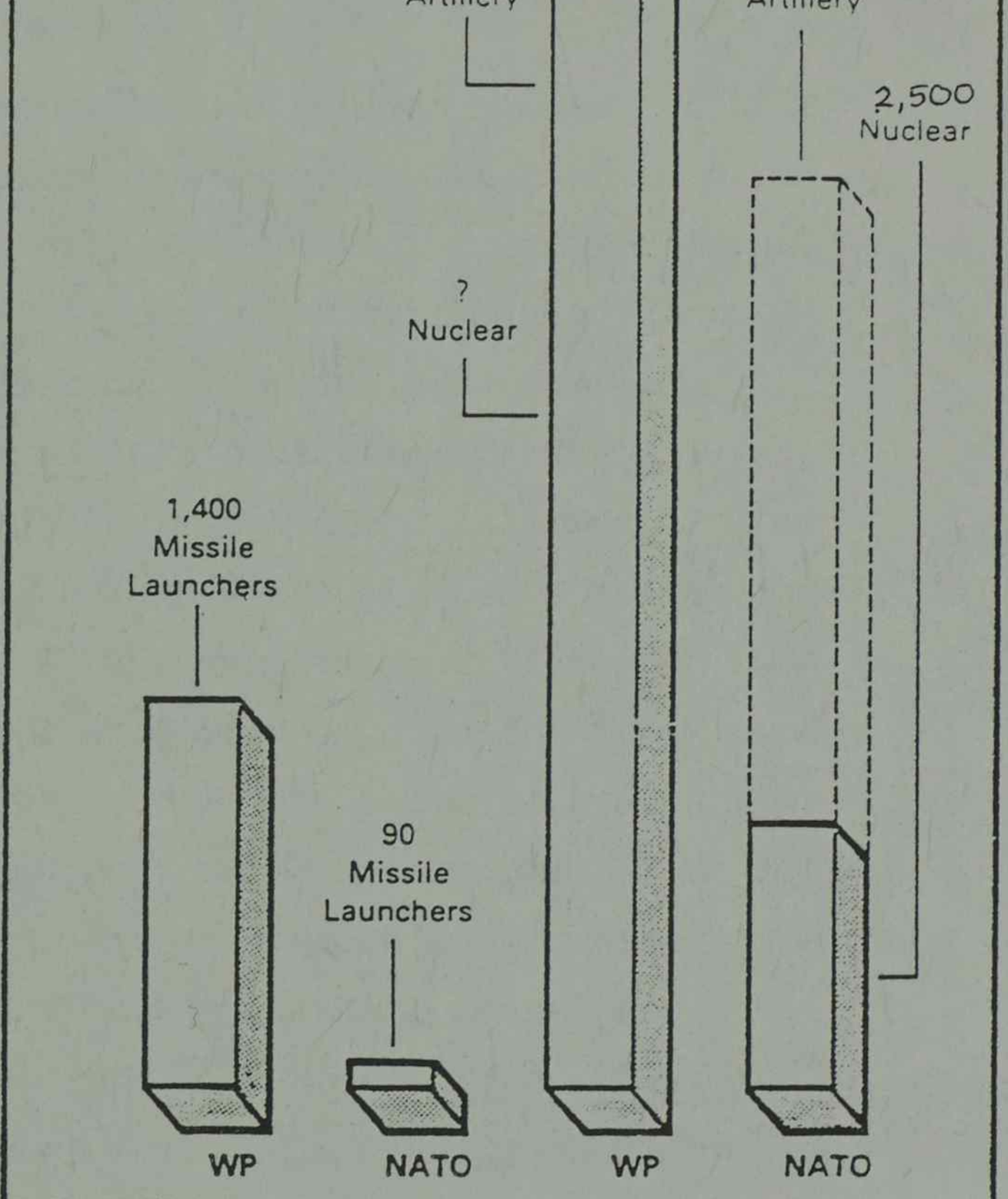
Missiles: Frog, SS-21, SCUD

Artillery: 152 mm, 203 mm 240 mm

NATO

Missiles: Lance

Artillery: 155 mm, 203 mm



Notes

SRINF Aircraft. This diagram shows all aircraft of types known to have a nuclear-capable variant. On the NATO side, the number assigned to the nuclear role is indicated by the coloured part of the column. The other aircraft shown are not assigned to the nuclear role, and could not be so used. The Warsaw Pact does not disclose similar information about its own aircraft, and it is not possible to produce reliable estimates. All Warsaw Pact aircraft of types known to be nuclear-capable are therefore shown.

Short-Range Artillery. This diagram shows all artillery pieces of types known to have a nuclear-capable variant. On the NATO side, the number certified for the nuclear role is indicated by the coloured part of the column. The other artillery pieces included are not available for use in the nuclear role. Similar information is not available for Warsaw Pact systems.

[1] Includes land-based systems deployed in Europe from the Urals westward.

[2] French systems are not included in this diagram. They comprise 80 Mirage IIIE and Jaguar aircraft and 30 Pluton missiles. The diagram does not include maritime systems.

[3] The range categories for SRINF and Short-Range Systems differ from those used in previous Statements. The change has been made to achieve consistency with the INF Treaty.

[4] Deployed launchers at 1 November 1987 according to data contained in the Memorandum of Understanding of the INF Treaty.

therefore included in Figure 19 all Warsaw Pact shorter-range aircraft of types that could deliver nuclear weapons. Many of these aircraft are capable of carrying air-to-surface missiles (ASMs) with ranges up to several hundred kilometres and fitted with either conventional or nuclear warheads; and new ASMs are being developed. The number of NATO SRINF aircraft with a nuclear role, 700, is indicated by the coloured part of the column; the other aircraft shown, a further 800, are of similar types but are assigned for conventional use.

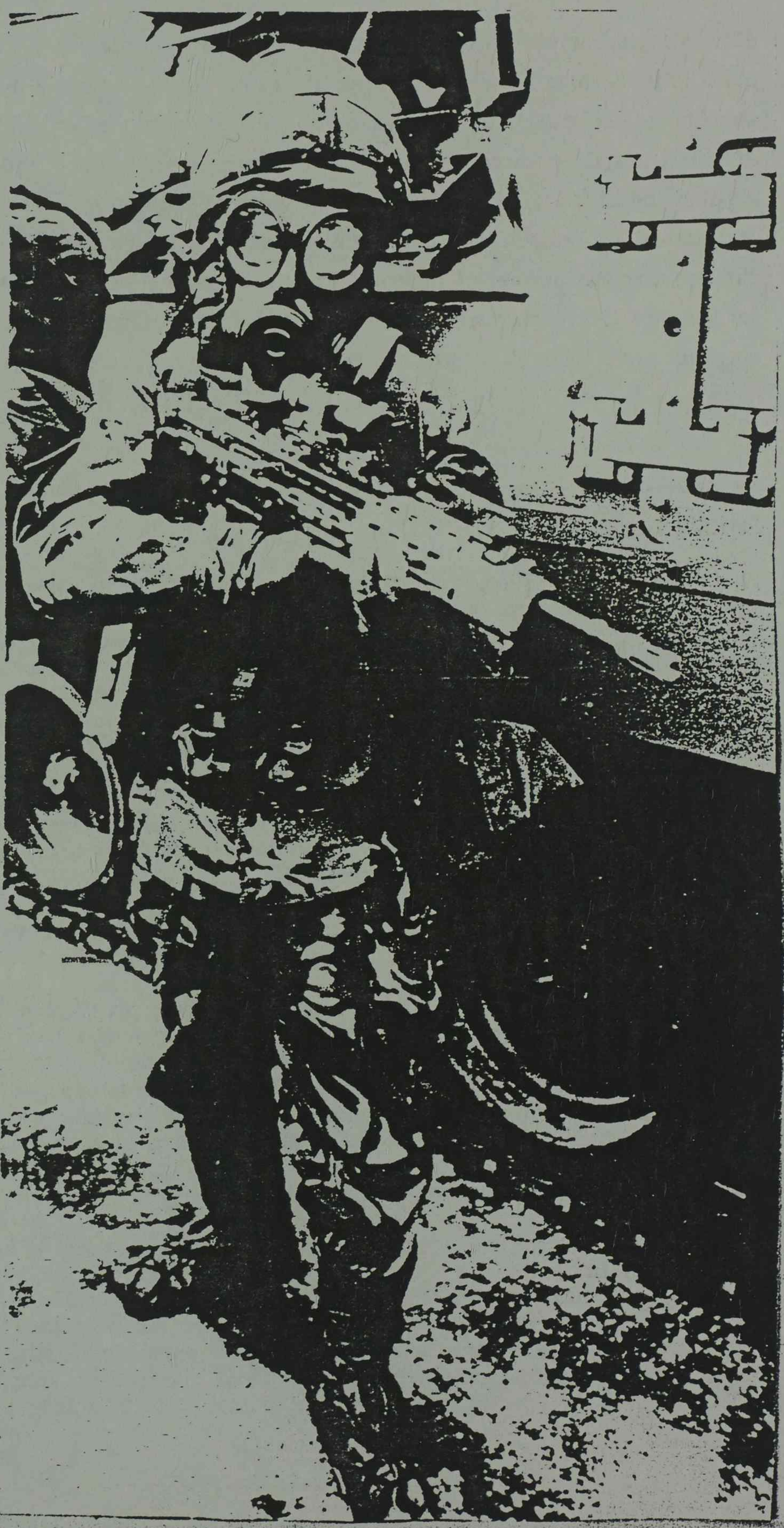
Short-Range Nuclear Forces

622. Short-range nuclear forces (Figure 19) include artillery and missiles with a range less than about 500 km and are sometimes referred to as battlefield weapons. On the Warsaw Pact side, the more accurate SS-21 short-range ballistic missile continues to replace Frog, and improved artillery is being deployed in greater numbers. The Warsaw Pact also has a large number of Scud missiles in service, with a range of about 300 km. The only short-range missile in this category assigned to NATO is Lance. As with tactical aircraft, artillery systems may also be dual-capable and we do not know precisely how many of the Warsaw Pact systems are intended for use in the nuclear role. Figure 19 therefore shows all Warsaw Pact artillery that could be used in such a role. For comparison, we also show the total number of dual-capable NATO artillery systems and, in colour, the number that have been certified to deliver nuclear shells. The NATO numbers are higher than those shown in last year's Statement. There are several reasons for this. In particular, the previous total numbers were based on the last set of figures produced by NATO, which were published in the Statement on the Defence Estimates 1985. Since then, NATO countries have begun to substitute larger calibre artillery, which is nuclear-capable, for smaller calibre weapons, which are not, and we have updated our figures to reflect this. In addition, in line with the decisions taken at Montebello in 1983 and in SACEUR's subsequent study of theatre nuclear requirements, a higher proportion of dual-capable weapons has been certified for nuclear use. But this does not mean that the availability of nuclear shells has increased; as we make clear on page [ ], NATO has 2,400 fewer nuclear warheads in Europe than in 1979.

SOVIET DEFENCE EXPENDITURE

623. The substantial improvement in Soviet military capabilities over recent years has been made possible by the high priority given to the defence sector in the allocation of resources. Expenditure on defence has grown in real terms by about 50% since 1970.

12. Infantryman in full CW protective kit.



The share of national economic output allocated to defence, at 15% of gross national product, far exceeds that of any NATO country.

624. Mr Gorbachev recognises that this defence burden is a major constraint on his plans to modernise and revitalise the Soviet economy and raise living standards. He has already made clear that he expects Soviet defence industries to operate more efficiently and to increase their manufacture of consumer goods and machinery for civilian industry. Given the number of new weapons now entering, or about to enter, production, we believe that only a policy decision to trim or abandon some programmes can prevent the burden of defence rising still further over the next few years. Except for systems given up under the INF agreements, and despite the declared Soviet position on other arms control issues, we have as yet seen no evidence that such policy decisions have been taken.

CHEMICAL WARFARE

1. The Soviet Union commands the world's largest, most comprehensive and advanced capability for chemical and toxic agent warfare (CW). This ranges from the research, production, and storage of lethal agents and chemical weapons to the protective systems required for their use. The Soviet Union has produced and stockpiled a wide variety of chemical agents and munitions and has a massive tonnage of nerve agent alone. These weapons very clearly represent a serious threat to NATO - a threat that has increased over recent years with improvements in Soviet CW capability.

2. The appalling and indiscriminate effects of chemical weapons have been seen in the Gulf conflict. Less widely understood are the effects of being forced to protect our troops against them on the battlefield.

3. British Servicemen are provided with a range of equipment to protect them against chemical attack. Protection for the individual Serviceman includes suits and respirators, monitoring equipment and medical aids. Where necessary and practicable, a filtered air supply provides collective protection, for example in the command centre of a destroyer, in the crew compartment of a tank, in portable structures on the battlefield or in key permanent buildings such as command and control centres. Our forces also operate detection equipment, which can monitor the atmosphere and warn when a hazardous concentration of chemical agent is detected. This equipment needs to be regularly updated to ensure that it remains effective against the agents likely to be used - and the pace at which new agents can be developed is a serious cause of concern.

4. But, despite this protection, our forces would be far less efficient when using it. On the battlefield, the mere threat of use by an enemy would require our troops to take defensive measures, so that they might have to fight in the equipment for very long periods. The protective suits in particular are cumbersome, impeding movement and vision and making the smallest task much more difficult. It is not easy to communicate, nor to read, write, study maps or give orders. Eating and drinking are awkward, slow and hazardous. The immediate effect is to sap both physical and

mental stamina; and experience in training suggests that the fighting capacity of troops could be reduced by up to 50%. Resupply and repair, involving the transfer of stores and equipment from a clean to a contaminated environment, and vice versa, pose enormous problems of control and decontamination. Similar difficulties arise in providing medical support; to the problems of treating casualties caused by chemical weapons must be added the complications of chemically contaminated wounds and injuries. Clearly such a position has far-reaching implications for NATO's ability to undertake sustained operations. In contrast, a potential aggressor, who would know when he intended to attack and with what kind of agent, would have the advantage of being able to operate without protection until it was actually needed. Consequently conventional defence would become far more difficult and, in the absence of a credible Western chemical deterrent capability, the early use of nuclear weapons would become more likely.

5. The United Kingdom has had no chemical weapons since the late 1950s, nor do we plan to change that policy; our research programme is entirely dedicated to improving the protective measures outlined above. The United States halted production of chemical weapons in 1969, although it retained a limited retaliatory capability. This unilateral restraint by the West has not been matched by the Soviet Union, and only a very small proportion of the US stock is now militarily useful. In view of the severe military disadvantages presented by the Soviet CW capability, the United States has begun a modernisation programme to replace its own stocks with binary weapons stationed on US territory. Binary weapons produce the same agents as existing weapons in the US stockpile, but they are much easier and safer to store, handle and destroy. We believe that the US modernisation programme will underline to the Soviet Union the benefits of the negotiated ban, which we, and all NATO members, remain committed to concluding. In the absence of such an agreement, the US capability will help maintain the NATO strategy of deterrence through flexible response.

A

gth of the Fleet

1. **Ships of the Royal Navy - Strength as at 1 April 1988 (i)**

rial(ii)	Type/Class	No.	Operational or engaged in preparing for service or trials or training	No.	Undergoing refit or on standby etc
1	**Submarines**				
	Polaris	3	Resolution, Repulse, Revenge	1	Renown
	Fleet	13	Churchill, Conqueror, Courageous, Sovereign, Swiftsure, Superb, Splendid, Sceptre, Trafalgar, Turbulent, Tireless, Torbay, Trenchant*	3	Valiant, Spartan, Warspite
	Type 2400	1	Upholder*		
	Oberon Class	9	Odin, Onslaught, Otter, Opportune, Olympus, Otus, Ocelot, Onyx, Osiris	2	Opossum, Oracle
2	**ASW Carriers**	2	Illustrious, Ark Royal	1	Invincible
3	**Assault Ships**	1	Intrepid	1	Fearless
4	**Guided Missile Destroyers**				
	Type 82	1	Bristol		
	Type 42	10	Exeter, Birmingham, Southampton, Nottingham, Liverpool, Manchester York, Gloucester, Edinburgh, Newcastle	2	Cardiff Glasgow
5	**Frigates**				
	Type 22	11	Battleaxe, Brazen, Boxer, Beaver, Brave, London, Sheffield+, Cornwall+, Coventry*, Cumberland*, Campbeltown* (iv)	2	Broadsword, Brilliant
	Type 21	5	Amazon, Ambuscade, Active Avenger+, Alacrity	1	Arrow
	Leander Class	16	Euryalus, Penelope, Arethusa, Phoebe, Sirius, Minerva, Danae, Andromeda, Scylla, Achilles, Charybdis, Diomede, Apollo, Ariadne, Cleopatra, Jupiter	2	Hermione, Argonaut
	Rothesay Class	1	Plymouth		
	Navigation Training Ship	1	Juno+		

Annex A

Serial	Type/Class	No.	Operational or engaged in preparing for service or trials or training	No.	Undergoing refit or on standby
6	**Offshore Patrol**				
	Castle Class	1	Dumbarton Castle	1	Leeds Castle
	Island Class	7	Alderney, Guernsey, Lindisfarne, Orkney, Shetland, Anglesey, Jersey		
7	**MCMVs**				
	Minesweepers	2	Soberton, Cuxton	2	Upton, Walkerton
	River Class	12	Waveney, Carron, Dovey, Helford, Humber, Blackwater, Itchen, Helmsdale, Orwell, Ribble, Spey, Arun		
	Minehunters Ton Class	10	Brereton+, Brinton, Bronington, Iveston, Kedleston, Kellington, Maxton, Nurton, Sheraton, Wilton	3	Kirkliston, Gavinton, Hubberston
	Hunt Class	12	Brecon, Brocklesby, Ledbury, Cottesmore, Dulverton, Middleton, Chiddingfold, Hurworth, Bicester, Atherstone, Berkeley+, Quorn*	1	Cattistock
8	**Patrol Craft**				
	Bird Class	5	Cygnet, Kingfisher, Peterel+, Sandpiper+, Redpole		
	Coastal Training Craft	15	Attacker+, Fencer+, Hunter+, Chaser+, Striker+, Archer+, Biter+, Smiter+, Pursuer+, Blazer+, Dasher*, Puncher*, Charger*, Ranger*, Trumpeter*(v)		
	Peacock Class	5	Peacock, Plover, Starling, Swallow, Swift		
	Gibraltar Search and Rescue Craft	2	Cormorant, Hart		
9	**Support Ships**				
	Submarine Tender	1	Sentinel		
	MCM Support Ship	1	Abdiel		
	Seabed Operations Vessel	1	Challenger		
10	**Royal Yacht/ Hospital Ship**	1	Britannia		

nex A

erial	Type/Class	No.	Operational or engaged in preparing for service or trials or training	No.	Undergoing refit or on standby etc
11	**Training Ships**				
	Fleet Tenders	4	Manly+, Messina+, Milbrook+, Mentor+		
12	**Ice Patrol Ship**	1	Endurance		
13	**Survey Ships**	8	Bulldog, Fox, Hecate, Herald, Gleaner, Hecla, Roebuck, Beagle	1	Fawn

s:

This table includes ships due for completion or disposal during the course of 1988-89; numbers of each type are not, therefore, an accurate indication of the ships available at any one time. Ships solely engaged in harbour training duties are not included.

All Ships in serials 1-7 are assigned to NATO, or will be so assigned on becoming operational. Ships in remaining serials could be made available in support of NATO operations if national requirements permitted.

Ships marked + are engaged partly on trials or training.

Ships marked * were under construction on 1 April 1988 and are planned to enter service during 1988-89.

Completion of Coastal Training Craft class delayed owing to contractual problems.

Ships approved during 1987-88 for disposal: Fife, Rothesay, Naiad, Aurora, Orpheus, Sealion, Stubbington, Wakeful.

Annex A

Table 2. Ships of the Royal Fleet Auxiliary - Strength at 1 April 1987

Serial	Type	No.	Operational or engaged in preparing for service or trials or training
1	**Fleet Tankers, Large**	4	Olmeda, Olna, Olwen, Tidespring
2	**Fleet Tankers, Small**	5	Black Rover, Blue Rover, Grey Rover, Gold Rover, Green Rover
3	**Support Tankers**	5	Appleleaf, Bayleaf, Brambleleaf, Oakleaf, Orangeleaf
4	**Fleet Replenishment Ships**	4	Resource, Fort Austin, Fort Grange, Regent
5	**Helicopter Support Ships**	2	Engadine (i), Argus
6	**Landing Ships Logistic**	6	Sir Bedivere, Sir Geraint, Sir Lancelot, Sir Percivale, Sir Tristram, Sir Galahad
7	**Forward Repair Ship**	2	Diligence, Stena Seaspread (ii)

Notes:

(i) RFA Engadine is engaged in training and will be replaced by RFA Argus (ex Contender Bezant) on completion of her trials.

(ii) Stena Seaspread is on temporary charter.

k A

e 3. **Royal Marines Commando Forces** (i)

erial	Type	No.
1	**Headquarters**	
	Commando Brigade Headquarters RM (incl Air Defence Troop)	1
2	**Commandos**	
	RM Commandos	3
3	**Artillery**	
	Commando Regiment RA	1
	Commando Battery RA (Volunteer)	1
4	**Engineers**	
	Commando Squadron RE	1
	Commando Squadron RE (Volunteer)	1
5	**Light Helicopter Support**	
	Brigade Air Squadron RM	1
6	**Logistics Units**	
	Commando Logistic Regiment RM	1
7	**Special Boat Service**	
	Squadron RM	5
8	**Assault Squadrons** (Landing Craft)	1
9	**Mountain and Arctic Warfare Cadre**	1

s:

Table does not include Royal Marine detachments on board Royal Navy ships.

Annex A

Table 4. Naval Aircraft

Serial	Role	Aircraft	Squadron No
1	**Air Defence/Recce/Attack**	Sea Harrier FRS1	800 801
		Sea Harrier FRS1/ Harrier T4	899
2	**Anti-Submarine**	Sea King HAS 5	810 814 819 820 824 826 (ii) 706
3	**Anti-Submarine/ Anti-Ship**	Lynx HAS 2/3	815 (ii) 829 (ii) 702
4	**Airborne Early Warning**	Sea King AEW 2	849 (ii)
5	**Commando Assault**	Sea King HC 4	845 846 707
6	**Aircrew Training**	Gazelle HT 2	705
		Jetstream T 2/3	750
		Chipmunk	-
7	**Fleet Support Search and Rescue**	Wessex HU 5	771 772
8	**Fleet Training and Support**	Hunter T8/GA11	-
		Canberra TT18	-
9	**Support**	Sea Devon	-
		Sea Heron	-

Notes:

(i) All the above aircraft are declared to NATO, or could be made available in support of NATO operations.

(ii) Aircraft in these squadrons are deployed in flights of single and multiple aircraft.

/1c

B

gth of the Army

Combat Headquarters (i)

	BAOR	Berlin	UK	Elsewhere
eadquarters				
rps Headquarters	1			
moured Divisional Headquarters	3			
fantry Divisional Headquarters			1	
igade Headquarters	9(ii)	1	20(iii)	1(iv)

t Arm Major Units (i)

	Regular Army				TA
	BAOR	Berlin	UK	Elsewhere	UK
rmour					
moured Regiments	12(v)		2(vi)		
moured Reconnaissance egiments	2		3		5(vii)
tillery (viii)					
ield Regiments	8		6(ix)		2
eavy Regiments	1				
issile Regiments	1				
epth Fire Regiments incl locating capability)	2				
ir Defence Regiments	2		1		4
cating Regiments			1		
gineers					
gineer Regiments	5		5	1(x)	7
moured Engineer Regiment	1				
phibious Engineer Regiment	1				
nfantry					
attalions	13	3	31	3	41(xi)
urkha Battalions			1	4	

Annex B

	Regular Army				TA
	BAOR	Berlin	UK	Elsewhere	UK
Special Air Service					
Regiments			1		2
Army Air Corps (xii)					
Regiments	3		1(xiii)		
Honourable Artillery Company					
Regiment					1

Notes:

(iv) Normal deployment locations as at 1 April 1988 are shown: no account is taken of temporary or emergency deployments.

(ii) Includes an Artillery Brigade Headquarters.

(iii) Includes three Engineer Brigade Headquarters.

(iv) 48 (Gurkha) Infantry Brigade.

(v) Includes the additional regiment for the remechanisation of 6 Brigade.

(vi) Includes one training regiment.

(vii) Two armoured reconnaissance regiments and three light reconnaissance regiments.

(viii) Artillery unit equipments consist of:

Field Regiments - depending on role, 105 mm light guns, 105 mm Abbot self-propelled (SP) guns, 155 mm FH70 towed howitzers and 155 mm M109 SP guns.

Heavy Regiment - 8 inch howitzers;

Missile Regiment - Lance;

Depth Fire Regiments - 175 mm self-propelled guns;

Air Defence Regiments - Rapier and Blowpipe/Javelin.

(ix) Includes one Commando regiment, one parachute regiment and the Royal School of Artillery Support Regiment. The Commando regiment has one TA battery.

(x) The Queen's Gurkha Engineers.

(xi) Includes six battalions formed under the TA Phase II expansion.

(xii) Aircraft types are: Beaver, Alouette, Scout, Lynx, Gazelle.

(xiii) Includes one TA Squadron.

CONFIDENTIAL

C

gth of the Royal Air Force

-Line Units (i)

erial	Role	Aircraft or Equipment	UK	RAF Germany
1	**Strike/Attack**	Tornado GR1	27 Squadron 617 Squadron	9 Squadron 14 Squadron 15 Squadron 16 Squadron 17 Squadron 20 Squadron 31 Squadron
		Buccaneer	12 Squadron 208 Squadron	
2	**Offensive Support**	Harrier	1 Squadron	3 Squadron 4 Squadron (ii)
		Jaguar	6 Squadron 54 Squadron	
3	**Maritime Patrol**	Nimrod MR	42 Squadron 120 Squadron 201 Squadron 206 Squadron	
4	**Reconnaissance**	Canberra PR9	1 PRU (iii)	
		Jaguar	41 Squadron	2 Squadron
5	**Air Defence**	Tornado F3	5 Squadron 29 Squadron	
		Lightning	11 Squadron (iv)	
		Phantom FG1	43 Squadron 111 Squadron (iv)	
		Phantom FGR2	56 Squadron (iv)	19 Squadron (iv) 92 Squadron (iv)
		Phantom F4J	74 Squadron (iv)	
		Bloodhound	25 Squadron (iv) 85 Squadron (iv)	
		Rapier	27 Squadron RAF Regiment (iv) 48 Squadron RAF Regiment (iv)	16 Squadron RAF Regiment (iv) 26 Squadron RAF Regiment (iv) 37 Squadron RAF Regiment (iv) 63 Squadron RAF Regiment (iv)
		Skyguard	2729 (City of Lincoln) Squadron R Aux AF Regiment (v)	

CONFIDENTIAL

Annex C

Serial	Role	Aircraft or Equipment	UK	RAF Germany
6	**Airborne Early Warning**	Shackleton	8 Squadron	
7	**Air Transport**	VC10	10 Squadron	
		Hercules	24 Squadron 30 Squadron 47 Squadron 70 Squadron	
		HS125/Andover/Gazelle Helicopters	32 Squadron	
		Pembroke/Andover		60 Squadron
		Chinook Helicopters	7 Squadron	18 Squadron
		Wessex Helicopters	72 Squadron	
		Puma Helicopters	33 Squadron	230 Squadron
8	**Tankers**	Victor K2	55 Squadron	
		VC10K2/3	101 Squadron	
		Tristar K1	216 Squadron	
9	**Search and Rescue**	Sea King Helicopters	202 Squadron	
		Wessex Helicopters	22 Squadron	
10	**Ground Defence**	Light Armour/Infantry Weapons	2 Light Armour Squadron RAF Regiment 15 Light Armour Squadron RAF Regiment 51 Light Armour Squadron RAF Regiment 58 Light Armour Squadron RAF Regiment 2503 (County of Lincoln) Field Squadron R Aux AF Regiment (iv) 2620 (County of Norfolk) Field Squadron R Aux AF Regiment (iv) 2622 (Highland) Field Squadron R Aux AF Regiment	1 Squadron RAF Regiment

erial	Role	Aircraft or Equipment	UK	RAF Germany
			2623 (East Anglian) Field Squadron R Aux AF Regiment 2624 (County of Oxford) Field Squadron R Aux AF Regiment 2625 (County of Cornwall) Field Squadron R Aux AF Regiment	

s:

This table shows normal deployment locations as at 1 April 1988. All front-line aircraft, together with certain training and communications aircraft, are assigned to NATO or could be made available in support of NATO operations. Additionally, at 1 April 1988 normal deployment outside the NATO area was as follows:

a. Falkland Islands. Phantoms, Hercules, Chinook helicopters, Sea King helicopters and Rapier. Hercules aircraft are also deployed to Ascension Island for the Falkland Islands airbridge.

b. Cyprus. One squadron of Wessex helicopters and one RAF Regiment squadron.

c. Hong Kong. One squadron of Wessex helicopters.

d. Belize. One flight of Harriers, one of Puma helicopters and a half squadron of RAF Regiment.

Also has Reconnaissance role.

PRU - Photo Reconnaissance Unit.

These are Air Defence forces under NATO command in peacetime.

R Aux AF - Royal Auxiliary Air Force.

2. An independent advisory group, consisting of distinguished scientists from outside the Ministry, has monitored the planning and execution of the treatment and the analysis of the results. On its recommendation, as a demonstration of confidence, sheep were safely grazed on the island during the spring and summer of 1987. The group has now endorsed our conclusion that the island can be considered safe for agricultural use; and it will shortly be returned to its original owners, as provided for in the terms of the transfer to the then Ministry of Supply in 1946.

DEFENCE EXPORTS

420. 1987 did not produce exports of defence equipment on the scale of the previous year, when the first contracts for the sale of Tornado aircraft and other equipment to Saudi Arabia - our largest ever defence order - were signed. But the general upward trend of our sales over recent years has continued, and contracts signed in 1987 are expected to reach £3,500 million.

421. Our defence trade with the United States has continued to grow, covering a wide range of British products for US forces; and last year we became the United States' leading defence trading partner. Other major successes in 1987 included sales of an Army communications system to Australia, and of Hawk aircraft to the Swiss Air Force.

422. The Defence Export Services Organisation (DESO) continues to work closely with British defence manufacturers, large and small alike, to help win orders in an extremely competitive world market. Industrial and financial symposia were arranged in 1987 to help companies formulate effective export marketing strategies. Among the promotional activities mounted during the year, the Royal Navy Equipment Exhibition at Portsmouth included representation from more than 300 British companies and attracted visitors from 76 overseas countries. The biennial British Army Equipment Exhibition will be held in 1988. These exhibitions, arranged by the DESO, are proving increasingly successful as shop windows for British manufacturers.

423. Strict controls of defence exports are essential to prevent weapons and other sensitive items falling into the wrong hands. These controls, involving several Government departments, must be applied effectively, but also with sensitivity so as not to impede unnecessarily the flow of legitimate defence business. The DESO plays an important part in exercising these controls and in advising industry on their effect.

BRITISH PARTICIPATION IN THE SDI RESEARCH PROGRAMME

424. The SDI Participation Office (SDIPO) in the Ministry of Defence has continued to promote British participation in this US programme under the terms of the US/UK MOU signed in December 1985. The service provided to help British companies and research institutions to secure SDI contracts remains the major activity of the office, which was reinforced in 1987 by the appointment of two further specialists, one based in Washington, the other in Los Angeles. The SDI supplement to the MOD Contracts Bulletin (see paragraph 406) has been well received. The comprehensive exchange of technical information between the US and British Governments, also coordinated by the SDIPO, is developing satisfactorily.

425. By February 1988 some 65 US-funded SDI contracts and sub-contracts had been placed in the United Kingdom to a value of $60 million. This total includes the first substantial sub-contract secured by British industry: by Ferranti Computer Systems Ltd, working for the Martin Marietta Aerospace Corporation on the US National Test Bed for the SDI. It also includes encouraging successes for British higher academic research bodies: 17 such institutions have received contracts worth $10 million. This work has been gained in a climate of competition for SDI research work that has turned out to be, if anything, more severe than predicted in last year's Statement.

426. The degree of interest shown by British industry in presenting proposals to the United States continues to grow. These proposals have been innovative and of high technical quality, but they need to be targeted with increasing precision as pressures on the SDI budget grow and as competition intensifies. The SDIPO will continue to contribute its best efforts to achieving this.

TABLE 5

COLLABORATIVE PROJECTS INVOLVING THE UNITED KINGDOM

PROJECT	PARTICIPATING COUNTRIES (1)
In production or in service	
Naval equipment:	
Sea Gnat Decoy System	DE/UK/US
Ikara Anti-Submarine Weapon	AUS/UK
Barra Sonobuoys	AUS/UK
Land equipment:	
FH70 Howitzer	GE/IT/UK
M483A1 Artillery Shell	NL/UK/US
Scorpion Reconnaissance Vehicle	BE/UK
Multiple-Launch Rocket System Phase 1	FR/GE/IT/UK/US
Missiles:	
Martel Air-to-Surface	FR/UK
Sidewinder Air-to-Air	GE/IT/NO/UK/US
Milan Anti-Tank (including improvements)	FR/GE/UK
Air Systems:	
Jaguar	FR/UK
Lynx	)
Puma	)FR/UK
Gazelle	)
Tornado	GE/IT/UK
Harrier AV8B/GR5	UK/US
Other Equipment:	
Midge Drone	CA/GE/UK
In development or earlier study phases	
Naval equipment:	
NATO Frigate Replacement (NFR90) (2)	CA/FR/GE/IT/NL/SP/UK/US
Ships Low-Cost Inertial Navigation System	CA/NL/SP/UK
Advanced Sea Mine (2)	UK/US
Land equipment:	
COBRA (Counter Battery Radar)	FR/GE/UK
Multiple-Launch Rocket System Phase III	FR/GE/UK/US

Missiles:	
Modular Stand-Off Weapons (2) (3)	CA/FR/GE/IT/SP/UK/US
TRIGAT (Third Generation Anti-Tank Guided Weapon)	FR/GE/UK
Advanced Short-Range Air-to-Air Missile	GE/NO/UK
NATO Anti-Air Warfare System (2)	CA/GE/NL/SP/UK/US
Family of Anti-Air Missile Systems	FR/IT/SP/UK
Air Systems:	
Airborne Radar Demonstrator System (2)	FR/UK/US
European Fighter Aircraft	GE/IT/SP/UK
EH101 Helicopter	IT/UK
A129 Light Attack Helicopter	IT/NL/SP/UK
RTM 322 Helicopter Engine	FR/UK
Other equipment:	
NATO Identification System (NIS) Information Exchange (2)	BE/CA/DE/FR/GE/IT/SP/ TU/UK/US
NIS, Question & Answer Component Development (2)	FR/GE/IT/UK/US
Ada Computer Language Project Support Environment (2)	CA/DE/FR/GE/IT/NL/NO/ SP/UK/US
Multifunctional Information Distribution System (2)	CA/FR/GE/IT/NO/SP/UK/US
Midge Post-Design Services	CA/GE/UK

Notes:

(1) AUS=Australia; BE=Belgium; CA=Canada; DE=Denmark; FR=France; GE=Federal Republic of Germany; IT=Italy; NL=Netherlands; NO=Norway; SP=Spain; TU=Turkey; UK=United Kingdom; US=United States.

(2) US share of these projects includes Nunn Amendment funding.

(3) The Modular Stand-Off Weapons programme has now subsumed the work of the Long-Range Stand-Off Missile programme, listed in 1987.

(4) Collaborative work on the Short-Range Anti-Radiation Missile, which was listed last year, has been discontinued.

ESSAY

PROCUREMENT: KEEPING UP WITH THE TIMES

1. The increasing sophistication of the threat faced by our armed forces, and the consequent growth in the real cost of equipment to meet it, have caused the Ministry of Defence to change the emphasis of its approach to procurement in recent years. We have adopted a more commercial attitude, exploiting the best practices to obtain long-term value for money. And we have been working more closely with our allies to secure greater output from our collective investment in defence procurement. Our fundamental aim remains unchanged: to buy for the armed forces the equipment they need to the required quality, at the right time and at the keenest price. Good management by the Procurement Executive (PE) contributes significantly to the ability of the British armed forces to meet our defence commitments. It also contributes to the Government's broader policy for improving the working of the economy by making markets operate more effectively.

2. Competition is a vital part of this strategy. As well as requiring companies to quote keen prices, it stimulates innovative thinking and efficient use of industrial resources. To make the defence market operate in a competitive way, we must have the right procedures and the right staff.

The Right Procedures

3. We used to define equipment down to a very detailed level and ask industry to develop and produce it. Today, however, industry makes a far greater contribution to deciding how the Services' requirements can best be met. Whenever possible, we express a requirement in terms of specified criteria, such as performance and reliability, and leave it to the contractor to decide how to meet them. This can lead, at one extreme, to an entirely new design or, at the other, to an off-the-shelf purchase.

4. We place responsibility and risk with the contractor, providing him with the incentive to deliver equipment at the agreed time and at the agreed price. Where appropriate, we place package contracts for both development and production, giving a potential contractor considerable freedom to decide how much development work will enable him to make us the most attractive offer.

5. Competition is sought wherever reasonable and practicable. Where it is not, we aim to give contractors the greatest possible incentive to perform the work efficiently. This means, for example, that we have moved away from contracts in which we pay the costs incurred plus a percentage fee for profit. We also encourage as much competition as possible among sub-contractors; on all contracts over £1 million in value, whether or not they have been let competitively, we review with the prime contractor his plans for competition in the award of sub-contracts.

6. We have, in addition, revised our approach to interim payments in new contracts; we now relate such payments to actual progress being achieved. In 1986 we secured Treasury agreement to increase the amount of underspent procurement expenditure that can be carried forward at the end of the financial year. In addition to the existing 5% of the provision for capital expenditure, we now have up to an additional £400 million for a period of three years. This greater flexibility means that we can maintain the financial incentive for contractors to perform efficiently, rather than working within a rigid annual cash limit, which in the past led to the Ministry making payments simply to reflect the passage of time rather than a contractor's performance.

7. By promoting efficiency, these policies in turn help companies to be competitive in their exports. And we therefore take great care over the export potential of equipment when we draw up staff targets and staff requirements.

8. The PE is also seeking to spread defence work more widely within industry. We already have about 9,000 companies registered with us, and the newly established Small Firms Advice Division helps small companies bid for defence work. Industry responds better when it understands our approach and has the fullest information possible about our requirements. Therefore:

- We have published a code of practice on competition in the award of sub-contracts, and guidelines on competitive tendering procedures and on financing of terms for defence contracts. These have all been prepared in consultation with industry.

- We announce details of potential orders worth over £0.5 million in the fortnightly MOD Contracts Bulletin, so that companies can compete for business at both prime- and sub-contract level. We also use the bulletin to help identify potential new bidders for major programmes and to encourage suppliers to tender for work in fields new to them.

- We arrange regular conferences to review with industry the future requirements of the armed forces.

- We brief unsuccessful bidders so that they know why they were not awarded contracts.

- The Defence Export Services Organisation advises companies on how to exploit the export potential of defence equipment.

The Right Staff

9. Competition makes demands on the PE's staff as well as on companies. Staff need to have as commercial an attitude as possible in their dealings with industry, while maintaining, as public servants, standards of even-handedness that cannot be measured in financial terms. We have adopted a systematic approach to career management and training to ensure that project staff receive, through a system of linked postings and training, the experience and knowledge they need in appropriate disciplines. We are continuing the policy of exchanging personnel between the PE and industry and commerce; there are now over 200 such interchanges a year, more than double the number two years ago.

10. Engineers play a vital role in the procurement process. The Defence Engineering Service, bringing together all the civilian engineering specialists in the Ministry of Defence, was successfully launched last year (see paragraph 520), enabling us to make the best use of these skilled specialists and improve their status.

11. Project managers are now clearly identified as in charge of, and responsible for, all aspects of a project's progress. They lead an integrated multi-disciplinary team, including finance and contracts staff. We are currently studying how best to enable the Defence Quality Assurance organisation to devote more attention to product specification, while retaining its responsibility for assessing and checking the quality management systems used by contractors.

12. The PE Management Board now operates on the model of a commercial board of directors, under the chairmanship of the Chief of Defence Procurement. Each of the three Systems Controllers (sea, land and air) provides a monthly report on the technical and financial progress of his projects, giving the earliest possible warning of difficulties.

The International Dimension

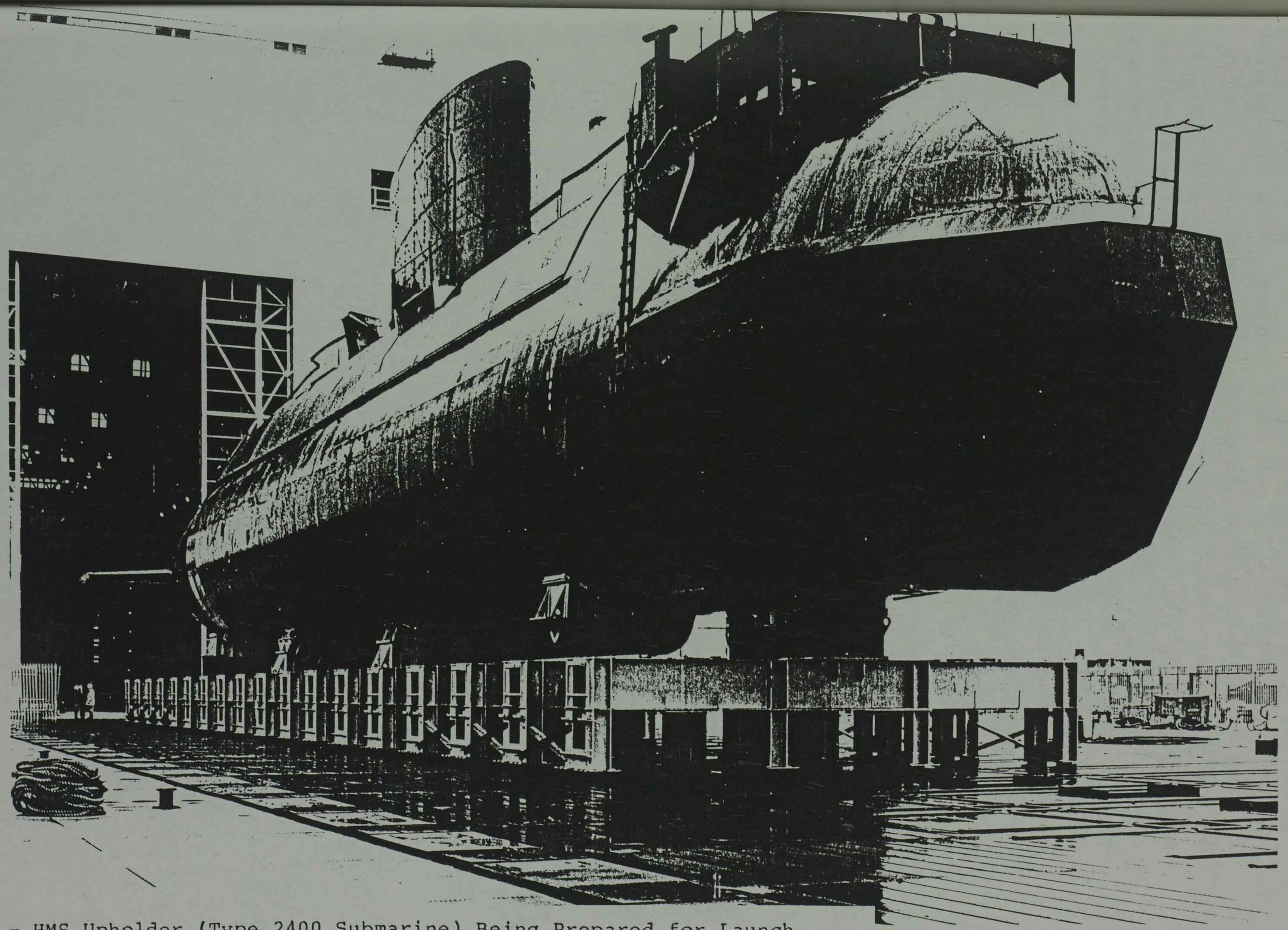
13. We cannot afford to develop all our defence equipment in this country. The argument for collaboration with our allies is straightforward: better value for money can be achieved by sharing development costs, increasing production runs and pooling resources for logistic support. No less important are the benefits to be gained from access to the best ideas from the best companies in partner countries. From an Alliance-wide point of view, we do not secure the best value from the resources we put into our collective defence (nor do we achieve full operational efficiency) if the development and production of similar equipment are wastefully duplicated by separate programmes in separate countries.

14. The traditional approach to collaboration, illustrated by the projects listed in Table 5, has been the development and production of equipment by groups of countries, or licensed production in one country of equipment designed in another. Last year's Statement recorded our commitment to develop and produce most significant new equipments in collaboration with allies unless there are pressing reasons not to do so - and provided we get value for money. The last qualification is important because collaboration is not an end in itself. There is growing acceptance of the need to maximise the benefits of international projects by adopting arrangements to promote efficiency. Other European nations, for example, increasingly recognise the advantages of competitive procurement, and this is becoming a more common feature of collaborative projects.

15. But we want to encourage different types of cooperation as well, since there will be occasions when the traditional approach is not the most efficient. In the case of the less costly projects, for example, it may make more sense for countries to agree to buy from one another equipment that each has developed on its own. This can lead to many of the benefits of collaborative development, with the added advantage of simplicity. Such an approach - known as reciprocal purchase - offers the prospect of introducing off-the-shelf equipment into service, thus eliminating or reducing duplication of research and development, as well as creating economies in production through longer production runs. Similar benefits can be obtained by off-the-shelf purchases from abroad with offset arrangements.

The Benefits

16. We can already see the benefits of adopting this commercial approach to procurement. The examples given in paragraph 405 of recent successes in driving



10 - HMS Upholder (Type 2400 Submarine) Being Prepared for Launch

down costs produced savings of £105 million in the last year. And significant savings have been achieved in previous years, for example £20 million saved on the first batch of Upholder class submarines; £100 million on the first order of the Warrior infantry combat vehicle; and £60 million on the RAF's basic trainer. In addition, international cooperation is enabling us to share the cost of developing expensive new equipment with our allies. The result is that our armed forces benefit by receiving more equipment for the same expenditure. And British companies, as they become more competitive and have better products to sell, are exporting more than ever; our defence exports tripled in real terms between 1979 and 1986.

17. The task is now to build on the successes already achieved and to reinforce the changes in practices and attitudes that have been described in this essay. We must keep up with the times if we are to continue to provide the British armed forces with the equipment they need within the resources available to us.

CHAPTER FIVE: MONEY AND MANAGEMENT

THE DEFENCE BUDGET

501. The defence budget for 1988-89 is £19,215 million - £433 million more than the original Supply Estimates provision for 1987-88 and £235 million more than the provision planned for 1988-89 in the 1987 Public Expenditure White Paper. The planned provision for 1989-90, at £19,950 million, is also above that shown in the 1987 White Paper, by £480 million. Provision for 1990-91 has been set at £20,560 million.

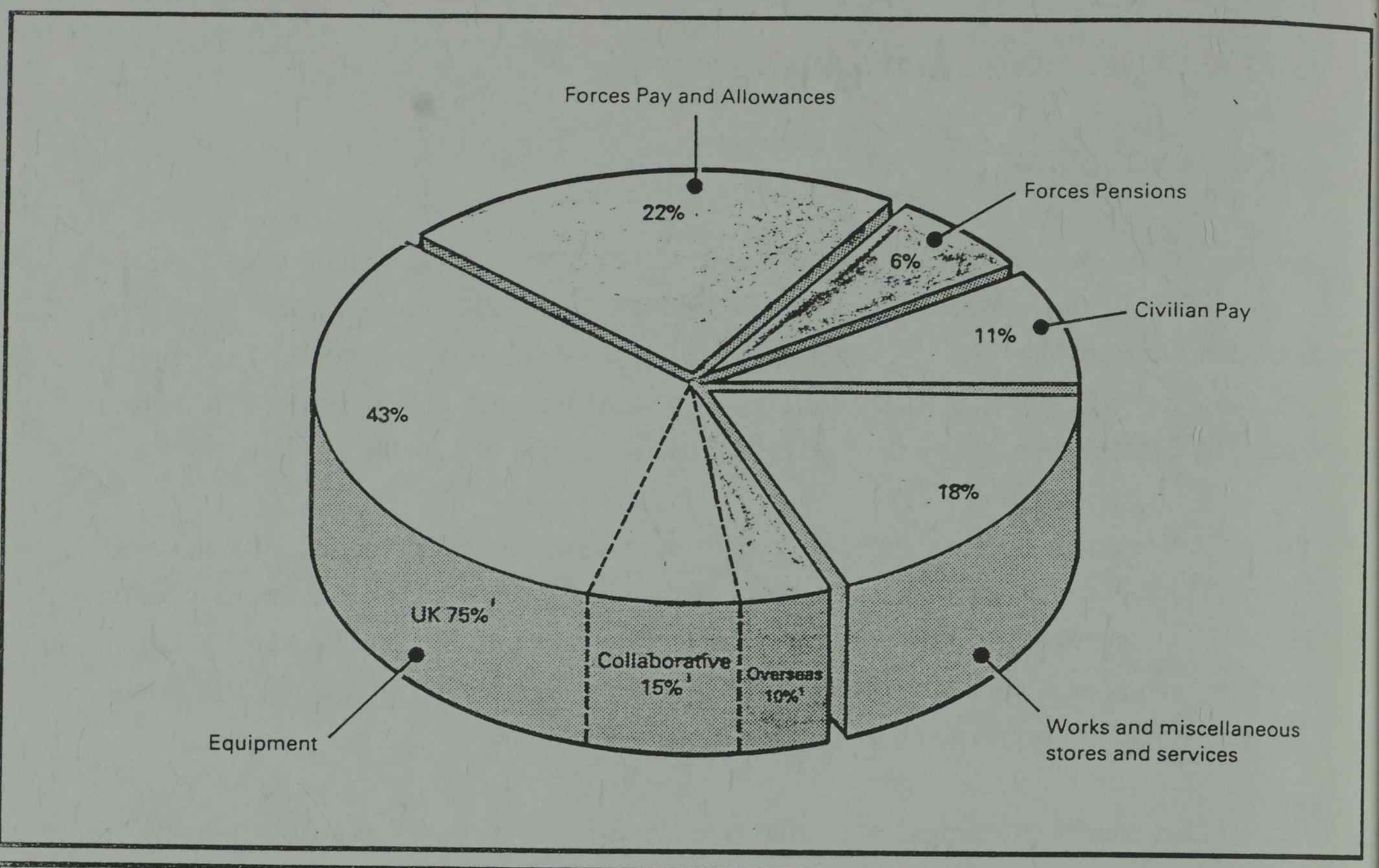
502. A breakdown of the defence budget by main areas of expenditure is shown in Figure 11. Figure 12 analyses defence expenditure by major programmes, while Figure 13 illustrates the cost of our main commitments. Figure 14 shows that, in absolute terms, as a percentage of gross domestic product, and per capita, the British defence budget continues to be among the highest in NATO.

503. Last year's Statement said that the defence budget was expected broadly to level out in 1989-90. New plans reflected in the 1988 Public Expenditure White Paper mean that, on current inflation forecasts, the defence budget will now benefit from a broadly level provision between 1988-89 and the end of the present public expenditure planning period in 1990-91. Past Statements have warned that the ending of the commitment to maintain real growth inevitably means that difficult choices have to be made between priorities in our forward plans; but we shall maintain our main defence roles. The extra resources now available provide greater room for manoeuvre at the margins of the programme, but will not avoid the need for some difficult decisions, of the kind we face every year in the course of our usual planning cycle. This makes it all the more important to pursue efficiency and value for money to the greatest possible extent. Recent progress in this area is described in the following paragraphs and in Chapter 4.

INVESTMENT IN CONVENTIONAL DEFENCE

1. Between 1979-80 and 1985-86 provision for defence grew steadily as a result of the Government's increasing expenditure in response to the NATO target of 3% a year real growth. This allowed a wide range of improvements to be made in the capabilities of our armed forces. In cash terms, about 95% of the increase was devoted to our conventional forces - some £16,000 million more than if expenditure had continued at 1978-79 rates - and this included substantial and continuing investment in equipment.

Fig 11- The Divisions of the Defence Budget by Principal Headings 1988-89



Note

[1] Percentage of equipment expenditure based on the last five years.

2. The product of this investment is illustrated in the following table, which sets out major new equipment ordered since 1979. The table also shows how much of this equipment has yet to be brought into service, illustrating that the benefits of this investment have yet to to be felt in full.

[Table 6 (temporarily attached at the end of this chapter) will appear here.]

Value For Money

504. The Ministry of Defence has made a major contribution to the Government's plans to reduce the size of the Civil Service. Since 1979 UK-based civilian staff numbers have decreased by over 100,000, or 41%, to 145,000, lower than planned. Over 65% of these savings have come from our programme of efficiency measures, rationalisation of tasks and contracting out; the remainder has resulted from the privatisation of the Royal Ordnance Factories and the introduction of commercial management into the Royal Dockyards. The search for further economies will continue.

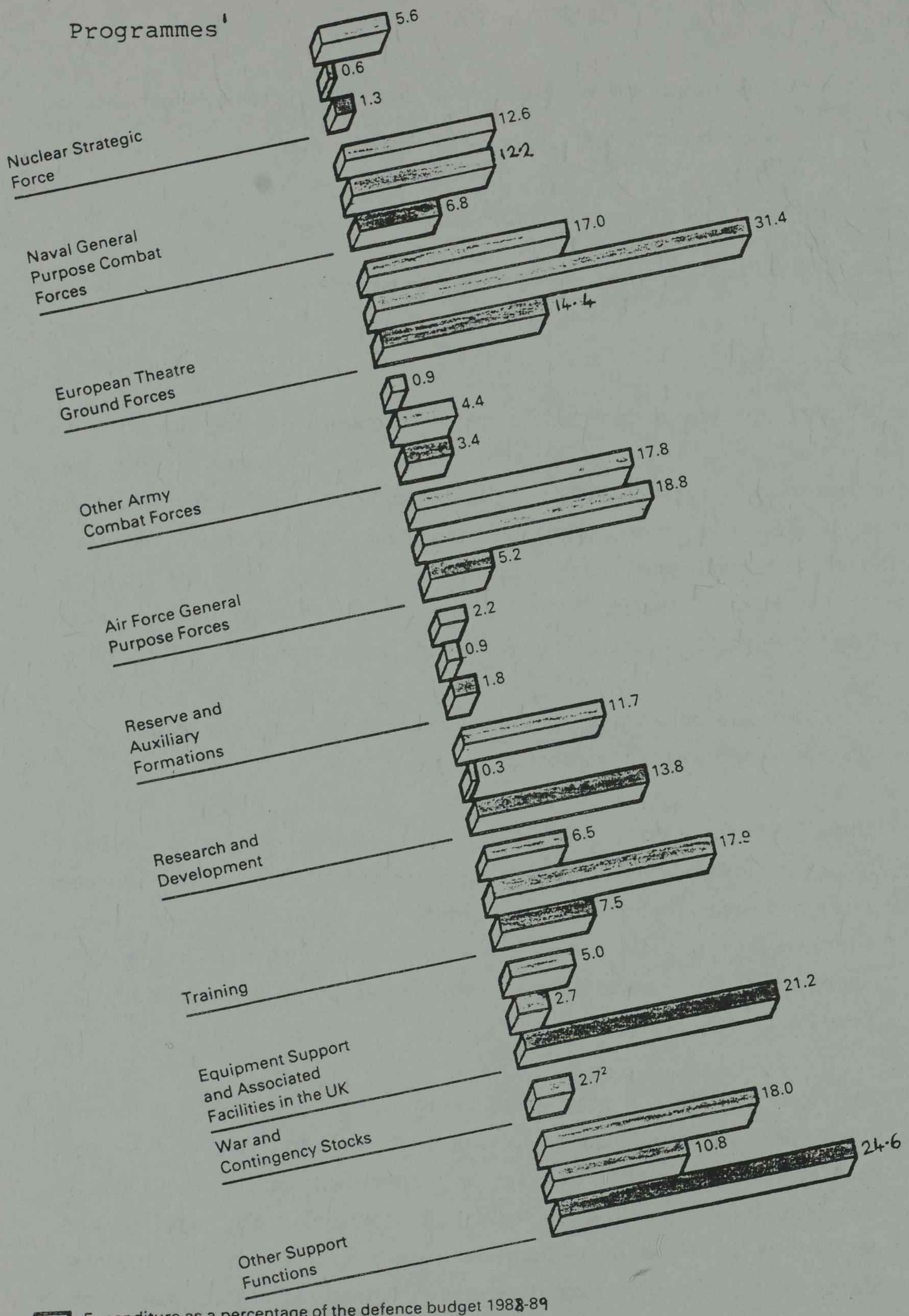
505. Economies are also being made in Service manpower, particular effort being directed towards achieving savings in support areas:

- Since 1981, the proportion of Royal Navy personnel serving on the front line or immediately in its support has increased to 70%, and the Service's uniformed strength has been reduced by over 8,000. Less manpower-intensive ships are also being introduced into the Fleet; for example, on current plans the crew of a Type 23 will be two-thirds of that needed in a Type 22.

- The Army's Lean Look programme is progressing well; this aims to save about 4,000 uniformed support posts by 1990, and about half of these had been achieved by April 1988. The programme will enable us to improve our front-line capability, including, for example, the reroling and deployment to BAOR of an additional armoured regiment and the new Starstreak air defence regiment, without any increase in total manpower.

- The RAF, too, continues to search for ways to carry out its task more efficiently; economies achieved by contracting out and transferring

Fig 12- An Analysis of Defence Resources (1988-89) by Major Programmes[1]



Expenditure as a percentage of the defence budget 1988-89

Service manpower as a percentage of estimated total average strengths

Civilian manpower as a percentage of estimated total average strengths

Notes

[1] A more detailed functional breakdown of the defence budget is given in Table 2.3 of Volume 2; the manpower devoted to each function is set out in Table 4.2 and Table 4.3.

[2] The percentage in 1987-88 was 3.1, not as incorrectly printed in last year's Statement.

Service posts to civilians have yielded savings of some 1,700 uniformed posts in the support area since 1984, and there are plans to save as many again over the next few years.

506. Increasing the role of the private sector in defence support tasks has the additional advantage of introducing the benefits to be derived from competition in the commercial market. For example, 90% of ship refitting is now undertaken commercially, including more than 20% in the open market; about one-third of the Army's third-line equipment repair work in the United Kingdom is undertaken by commercial contractors; and about half of all aircraft and engine repair and overhaul for the RAF is carried out in industry.

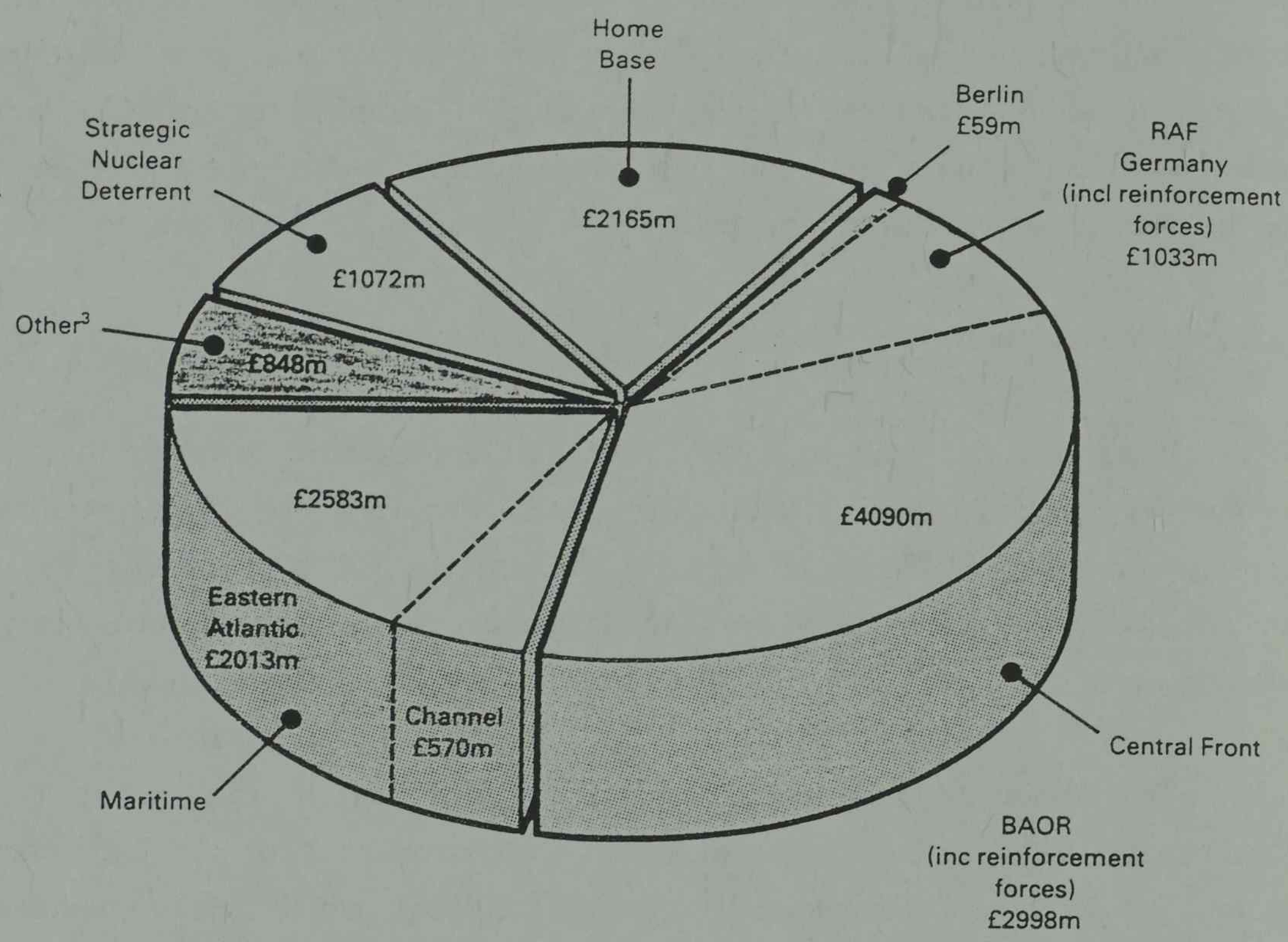
Financial Management

507. Improving the way in which Whitehall departments manage their resources remains an important aim of the Government. The Financial Management Initiative (set out in Cmnd 9058 of 1983) aims to achieve this by stressing the need for departments to set clear objectives, to define precisely where responsibility lies for meeting these objectives and to monitor whether they are being achieved.

508. The Ministry of Defence is playing a full part in this initiative. Recent Statements have described the development and introduction of such new management systems as Executive Responsibility Budgets (ERBs), which enable management to relate all the costs attributable to a particular activity to the results produced by it; and Staff Responsibility Budgets (SRBs), which allow managers flexibility in the allocation of manpower. In 1987-88 the ERB arrangements were extended to further units in the support field. And higher-level ERBs were introduced in a number of management areas: naval supply, aircraft engineering and marine services, Army supply and training, RAF repair and supply, and Service hospitals in the United Kingdom. The ERB system currently covers cash expenditure amounting to some £5,000 million a year. For the future, there are firm plans for the introduction of more ERBs at both unit and senior management level.

509. Work is continuing on the development of the new management strategy foreshadowed in last year's Statement. The aim is to secure better value from the Department's running costs (ie all expenditure other than major capital expenditure) by more closely aligning responsibility for both financial and line management. The

Fig 13- Estimated Cost of Defence Commitments for 1988-89[1,2]



Notes

[1] The total cost matches the total expenditure (£10,758 million) covered by the first six sections of Table 2.3 of Volume 2.

[2] All the costs shown include directly attributable expenditure on capital works and equipment and are running costs for materiel and manpower. The costs of operational headquarters, bases and general operational support have been attributed *pro rata*.

[3] 'Other expenditure' in this diagram includes the costs of amphibious capability, the Allied Command Europe Mobile Force (air and land), the United Kingdom Mobile Force, and out-of-area commitments.

emphasis is on centralised resource allocation, greater managerial freedom within the approved budgets and accountability to higher management. The new strategy has two main elements:

- A more comprehensive budgetary regime, which will not only subsume existing ERBs and SRBs but also include all the Department's running costs, both in the operational and support areas; and

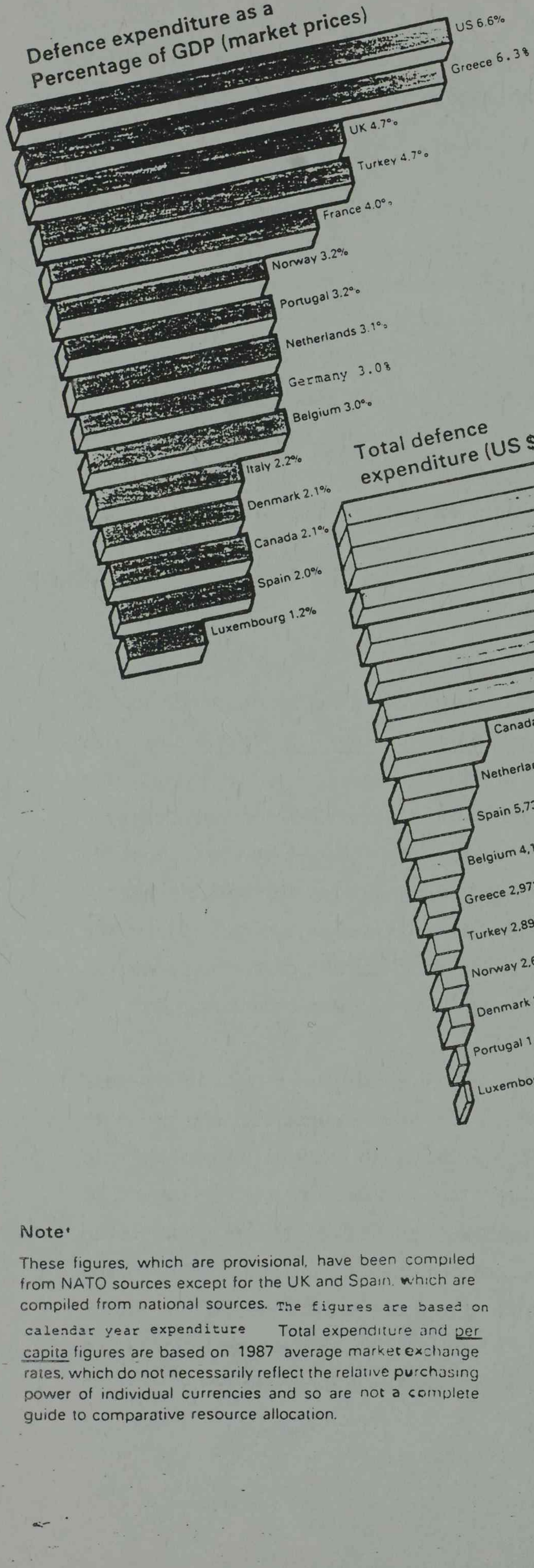
- A management information system (TOPMIS), which will replace MINIS and will serve the needs of the Financial Planning and Management Group (in its role as the Ministry's Top Management Group), the Service Executive Committees and the Procurement Executive Management Board, providing them with a vehicle for setting objectives and targets and undertaking an annual review of performance.

'The Next Steps'.

510. In February, the Government announced its response to the recommendations in Sir Robin Ibbs' report on Improving Management in Government - The Next Steps. This accepted the report's recommendation that, to the greatest possible extent, the executive functions of government should be delegated to agencies each headed by a chief executive working within a policy and resources framework set by the responsible Minister. The Ministry of Defence is considering two candidates for possible agency status: the group of six non-nuclear research establishments (see paragraph 418) and the Meteorological Office (see paragraphs 530-532). The identification of further potential candidates will depend on the experience gained in working up these initial proposals.

511. The Ministry's aim for the non-nuclear research establishments is to devise a framework of clear and precise aims, within which the management can operate with greater efficiency and which will allow greater flexibility to exploit the considerable intellectual and physical asset of these establishments. This is currently the subject of a feasibility study. In the case of the Meteorological Office, the proposal is an extension of the existing policy of developing greater managerial responsibility and increasing commercial independence. Much planning remains to be done, but the aim is to achieve agency status for the Meteorological Office in 1990. The Trade Unions have been informed of these proposals and assured that they will be fully consulted.

Fig 14- A Comparison of Defence Expenditure: NATO countries 1987



Note:

These figures, which are provisional, have been compiled from NATO sources except for the UK and Spain, which are compiled from national sources. The figures are based on calendar year expenditure. Total expenditure and per capita figures are based on 1987 average market exchange rates, which do not necessarily reflect the relative purchasing power of individual currencies and so are not a complete guide to comparative resource allocation.

PERSONNEL

The Services

512. The manning position in the armed forces is broadly satisfactory, although there are shortfalls in certain areas. The Services face stiff competition from civilian employers, especially in those areas where there are national shortages of well qualified and able staff. Nevertheless, recruitment has reached 99% of the targets for both officers and other ranks; shortfalls in officer recruitment have been in specialist areas, for example medical officers.

513. Competition with the private sector is likely to increase over the next few years as demographic trends lead to fewer young people being available for employment, while the expansion of the economy increases the number of jobs available. To help forestall this difficulty the Services are seeking to retain trained manpower for longer periods. This has the added benefits of ensuring a better return on our investment in training those retained, of reducing pressures on training organisations, and of making more trained and experienced manpower available for front-line tasks.

514. At December 1987, the annual rates of applications for premature voluntary retirement were some 3.63% of the trained strength for officers and 3.04% for other ranks. The proportion of those who actually left was running at annual rates of 3.13% for officers and 2.71% for other ranks. Current levels are fairly stable and compare favourably with previous years; but some concern remains.

515. The Government has ensured that Service pay has been kept broadly at a competitive level. The wide-ranging review of the armed forces' allowances, mentioned in last year's Statement, will ensure that they remain adequate and appropriate to the operational needs of each of the three Services.

516. Over the past year there has been wide publicity and understandable public concern about a series of incidents and allegations of bullying, ill-treatment and initiation ceremonies in the Army. This concern has been shared by Ministers and the Army Command at all levels; bullying and humiliating practices form no part of Service life, and are not tolerated. All soldiers are briefed on, and regularly reminded of, their right to make a complaint if they believe they have reason. They are further made aware of the procedures for so doing, including direct access to their commanding

officers, and of the help available from unit families' and medical officers, padres and members of the Women's Royal Voluntary Service. All complaints are thoroughly investigated, and prompt disciplinary action is taken if they are substantiated.

517. Of some 120 cases reported and investigated between January 1986 and April 1988, the allegations in half have been found to be groundless. Investigations continue in 15 cases. Allegations in 45 cases, some of them serious, have been substantiated; they have been, or are being, dealt with by appropriate disciplinary action, including in certain cases imprisonment and dismissal from the Army. The available evidence does not show a rising trend in the incidence of bullying or ill-treatment of soldiers, nor does it support the view that this is a general or deep-seated problem. But the Army is certainly not complacent. Following a very full examination by Commanders-in-Chief, the Government outlined, in January 1988, a series of further measures to eradicate bullying. The measures include better supervision in training depots; more emphasis on man-management and the responsibilities of officers and NCOs to their men; a further examination of selection procedures for both recruits and NCO instructors at training depots; better use of volunteers who work with the Army; and the formal banning of all harmful initiation ceremonies.

Civilians

518. The Department continues to experience problems in recruiting and retaining civilian staff at many levels and in a variety of fields, including high quality administrators and specialists such as electronics engineers, staff trained in automatic data processing (ADP), and management accountants. There are also acute shortages of clerical and secretarial staff, especially in London and the south east; and problems in recruiting and retaining certain industrial grades, particularly craftsmen.

519. A number of initiatives has been taken to improve matters, including:

- A new flexible pay agreement covering 25,000 specialist staff, to give management more scope in tackling problems of recruitment and retention;

- incentive pay arrangements across the Civil Service to link the pay of senior grades to performance;

- the introduction of a new fast stream for high quality recruits to the defence science group, offering individual career development, training

and accelerated promotion prospects similar to those enjoyed by fast-stream administrators and engineers;

- the adoption of short-service contracts to attract additional specialists with specific skills and experience;

- a new, more dynamic, recruitment strategy, aimed at graduate scientists and engineers, which includes better advertising and recruitment literature, and visits to universities and career conventions;

- higher allowances for ADP and management accountancy staff;

- in the support grades, a drive to improve recruitment; employment of agency secretarial staff, clerks and typists; moving work out of London; and consideration of proposals to introduce local pay additions for staff in the hardest hit areas; and

- for industrial grades, consideration of measures to relate pay more closely to the local market rate.

520. The Defence Engineering Service (DES) was launched successfully last year, when the first young engineers were recruited to the new fast stream. We are looking to build on this initial success by expanding the fast-stream entry to cover the sea systems area, by improving career development, training, and promotion arrangements, and by expanding our sponsorship of students reading for engineering degrees.

SUPPORT SERVICES

Defence Medical Services

521. We are pressing on with our efforts to get value for money in the provision of medical services. Contracts for dental technical work have now been placed at a saving of £125,000 a year. In the Falkland Islands, the temporary British Military Hospital at the Canache has been closed and we are using the recently opened King Edward VII Memorial Hospital at Stanley, sharing the cost with the Falkland Islands Government. The direct supply of drugs from manufacturers to Service hospitals and other defence medical establishments remains under consideration. The potential benefits, including faster delivery and cheaper storage and distribution, are having to be measured against

a continuing need to stockpile and distribute drugs for operational purposes, where direct supply would not adequately meet our requirements.

522. To help reduce waiting lists at National Health Service (NHS) hospitals, we have reached an agreement this year with the Department of Health and Social Security that will enable local health authorities to make greater use of Service hospitals. Each year these hospitals treat, free of charge, 34,000 in-patients, 200,000 out-patients and 4,000 day patients referred to them by NHS general practitioners. The new agreement will enable additional patients to be treated against payment to the Ministry of Defence from Department of Health and Social Security funds.

DEFENCE STATISTICS

1. Thirty-five members of the Government Statistical Service work in the Ministry of Defence, using their mathematical and data management skills to organise and interpret a wide range of information. For example, the Ministry's half million men and women are employed in a wide variety of jobs and locations, and are constantly on the move. Statistical expertise helps to monitor, report and forecast strengths by area and role so that manning levels can be planned and controlled.

2. A number of organisations provide support for the front-line troops, and the Financial Management Initiative (see paragraph 507) calls for measurement not only of the cost but also of the volume and quality of the services provided. During 1987-88 our statisticians have been developing new output measures to assist this process.

3. Developing new weapons systems at the forefront of technology can pose problems for management, since both costs and development timescales are potentially at risk. Statisticians provide defence planners with practical methods for assessing these variables, thus enabling decisions to be made on the level of risk involved in any new project.

4. The statisticians' other activities include economic and logistic forecasting, and surveying pay and conditions and hours worked. They also prepare the second volume of this publication, which provides a comprehensive breakdown of trends in defence expenditure and resources.

Public Relations

523. The highlight of the year for public relations was the Prime Minister's meeting with Mr Gorbachev at RAF Brize Norton in December 1987, when the Defence Public Relations Staff provided facilities for 578 media representatives from around the world. As the INF negotiations progressed, they also arranged for the press to visit RAF Molesworth for the first time, and organised three further visits to RAF Greenham

Common; and they provided briefings on the arrangements for verifying implementation of the INF Agreement.

524. Facilities were provided for six press visits to the Royal Navy's ARMILLA patrol; and in September 1987 the press were able to watch the progress of the four MCMVs on their way to the Gulf to support the patrol. Journalists were invited to all the major exercises of the year including PURPLE WARRIOR, where the presence, for the first time, of the Warsaw Pact observers in the United Kingdom attracted particular interest. Exercise KEYSTONE also received wide media coverage, both in the United Kingdom and in the Federal Republic of Germany. For the third year we have published, for free distribution, a booklet accompanying this Statement and designed to explain British defence policy to a wider audience.

The Defence Estate

525. The Ministry of Defence continues to review its land holdings regularly, to identify and dispose of surplus land. The estate is still getting smaller, despite the acquisition of additional land essential for the Army's training needs. In the future we expect the size of the estate to stabilise, further acquisitions of relatively low-value training land being offset by disposal of high-value land where efficiency and operational needs allow. We are, for example, working to rationalise our land holdings in high-value areas such as north-west London. Receipts from the sale of surplus land and buildings in 1986-87 were £75 million, compared with a target of £64 million, and in 1987-88 receipts of well over £70 million are expected (again against a target of £64 million).

526. In common with the whole of southern England, the defence estate suffered great damage to both buildings and trees as a result of last October's gales; and the subsequent flooding in the west country did yet more damage. The total cost to Defence votes, including building repairs, replacement of trees and loss of revenue, is estimated at £8.6 million. Planting programmes over the next few years will include the replacement of trees lost in the storm.

527. As part of our contribution to the European Year of the Environment (EYE), we published a brochure entitled Defence and the Environment, describing the varied conservation activities of the Services across the defence estate. Two of the main aims of EYE were conservation of the countryside and improvement of the urban environment. In pursuit of the first aim, conservation groups in defence establishments, with the help of the Property Services Agency, undertook special projects such as

creating wetland, clearing scrub and planting hedgerows. Many thousands of trees were also planted, including, in one instance, a whole wood of native broad-leaf trees. Keeping the defence estate tidy is part of routine estate management, but a special effort has been made to clean up litter and remove eyesores.

528. We also welcomed the opportunity to participate in the Countryside Commission's National Parks Awareness Campaign in 1987 and we drew up a Declaration of Commitment to National Parks, in which we undertook to promote the aims of the park authorities, taking account of our essential defence needs. And we concluded a Declaration of Intent with the Nature Conservancy Council, designed to strengthen our already close relationship and to facilitate notification of Sites of Special Scientific Interest, of which the Ministry of Defence manages a large number.

529. There are over 500 listed historic buildings on the defence estate, and we take our responsibility for them seriously. Problems can occur when we no longer have a use for them. We have, therefore, established an informal advisory group, the Historic Military Buildings Committee, including experts from both the private and public sectors, to consider imaginative and sympathetic ways of using or disposing of historic buildings that are no longer required. Trust bodies, funded by Government endowments, have also been set up to maintain the fabric of historic buildings at the former Chatham dockyard and the Heritage Area in Portsmouth naval base.

The Meteorological Office

530. The Meteorological Office applies nearly half its resources to meet the requirements of the armed forces; and, as the national meteorological service, it provides free weather forecasts to the public. Last year's Statement described the range of services also provided on repayment to local authorities, industry and commerce (including civil aviation, which accounts for about a quarter of the Office's work). Further repayment services introduced during the last year include an automated weather forecasting service for the oil industry, particularly in the North Sea, and a separate marketing unit set up as a profit centre within the London Weather Centre to cater for the particular needs of the retail trade, including supermarkets and large stores. Receipts from these and similar repayment services totalled £23.6 million in 1986-87, of which £17.4 million was earned from services to civil aviation.

531. Warnings of the severe storm over southern and eastern England on the night of 15-16 October were issued to many specialist users of the Office's meteorological services (including the armed forces and the offshore oil industry) some hours before

the storm. There was, however, much criticism of the adequacy of the warning given to the general public, and of the accuracy of the forecasting involved.

532. Sir Peter Swinnerton-Dyer, Chairman of the University Grants Committee, and Professor Pearce of Reading University were appointed to consider the internal report on this event carried out by the Director General of the Meteorological Office. They concluded that the warning was inadequate because uncertainty about atmospheric conditions in the Biscay area led to conflicting computer forecasts, and because it was not recognised that these forecasts would underestimate wind speeds over the United Kingdom. But no individual was seriously to blame for this. They recommended improvements in training forecasters, the use of more senior staff for forecasting, improved computer and associated facilities, and changes both in working methods and in the presentation of forecasts by the media. They also endorsed the findings and recommendations of the Director General's report, which dealt in particular with the need for more and better observations, for improved computer models and for a review of procedures for sending warnings of severe weather to emergency authorities. The recommendations of both reports have been accepted and will be implemented as soon as possible.

The Ministry of Defence Police

533. The changes in management and organisation of the Ministry of Defence Police (MDP), reported in last year's Statement, have been taken a stage further. In April, the MDP Headquarters was reorganised along functional lines, separate branches being responsible for operations, support, and personnel and training. The Chief Constable has been given budgetary responsibilities for many of the costs of his Force, and the secretariat has been strengthened to assist with the management of these tasks. These changes are aimed at providing a better and more cost-effective service to the Department and other organisations that benefit from the MDP's services.

Table 6 Major Equipment Ordered since 1979

Royal Navy(1)	Numbers Brought into Service	Balance
Submarines		
2 Trident	-	2
5 Nuclear-powered Fleet	2	3
4 Type 2400 Diesel-Electric Patrol	-	4
Frigates		
8 Type 22	4	4
4 Type 23	-	4
MCMVs		
8 Hunt Class	7	1
12 River Class	12	-
5 Sandown Class	-	5
Patrol Craft		
3 Falkland Island Patrol Vessels(6)	3	-
2 Offshore Patrol Vessels	2	-
5 Hong Kong Patrol Craft	5	-
Auxiliaries		
1 Seabed Operations Vessel	1	-
2 Auxiliary Oiler Replenishment Vessels	-	2
1 Aviation Training(6) Ship	1	-

Army	Numbers Brought into Service	Balance
Tanks		
7 Challenger Regiments	5	2
Full Operational Stocks of 120mm Ammunition (2)	Complete	
Night Observation and Gunnery Sights (2)	Initial Batch	Final Batches
Armoured Personnel Carriers		
13 Warrior Battalions	1	12
10 Saxon Battalions	8	2
Logistics Vehicles		
1045 14 Tonne Load Carriers	130	915
3,006 8 Tonne	2,547	459
343 6X6 Recovery Vehicles	271	136
Helicopters		
25 Lynx (armed with TOW)	25	-
Further Improved TOW for Lynx Anti-Tank Squadrons	-	All
Field Artillery		
3 MLRS Regiments	-	3
1 Bates System	-	1
Air Defence Batteries		
3 Rapier Field Standard B2	-	3
4 Tracked Rapier	2	2
2 Rapier 2000(FSC)	-	2
18 Javelin Launchers(7)	12	6
3 Starstreak High Velocity Missile (HVM)	-	3

RAF(1)	Numbers Brought into Service	Balance
Strike Attack		
82 Tornado GR1	55	27
Offensive support		
96 Harrier GR5(3)(4)	2	93
Air Defence		
162 Tornado ADV	85	77
15 Phantom F4J	15	-
7 Boeing E-3	-	7
Transport/Tankers(5)		
9 Tristar	3	6
8 Chinook Helicopters	8	-
Basic Trainer		
130 Tucano	-	130