DOCUMENT 786 31st October 1978

ASSEMBLY OF WESTERN EUROPEAN UNION

TWENTY-FOURTH ORDINARY SESSION

(Second Part)

A European armaments policy

REPORT

submitted on behalf of the
Committee on Defence Questions and Armaments
by Mr. Critchley, Rapporteur

ASSEMBLY OF WESTERN EUROPEAN UNION

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1. Adopted in Committee by 7 votes to 6 with 3 abstentions.

2. *Members of the Committee :* Mr. *Roper* (Chairman) ; MM. Bonnel, *Roberti* (Vice-Chairmen) ; MM. *Ahrens*, *Baumel*, Bechter (Alternate : *Bozzi*), *van den Bergh*, Boldrini, *Boucheny*, *Critchley*, *Dejardin*, Fosson, *Grant*, Handlos, *Hardy*, Konen, de Koster, Lemmrich, *Maggioni*, Ménard, Pawelczyk (Alternate : *Büchner*), Pecchioli, Péronnet, Hermann Schmidt (Alternate : *Vohrer*), Scholten, *Tanghe*, Whitehead (Alternate : *Banks*).

N.B. *The names of those taking part in the vote are printed in italics.*

Draft Recommendation

on a European armaments policy

The Assembly,

Aware that the growing cost of modern armaments technology and current economic trends can lead to unilateral disarmament through inflation in the countries of the Alliance ;

Stressing the need for the joint production of armaments in order to provide interoperability and standardisation of military equipment ; to ensure the survival of a viable European armaments industry ; and lastly a two-way street in armaments with the United States ;

Considering that limited but as yet too slow progress in these directions is now being made in the independent European programme group, in the NATO Conference of National Armaments Directors, and Military Agency for Standardisation, in all of which all WEU countries participate ;

Believing that only if the European armaments industry as a whole is restructured on a viable and competitive commercial and industrial basis will adequate progress be made ;

Welcoming the study of the European armaments industry being undertaken by the Standing Armaments Committee,

RECOMMENDS THAT THE COUNCIL

1. Urge that efforts to achieve joint production, interoperability and the standardisation of defence equipment in the European countries of the Alliance be concentrated in the independent European programme group ;

2. Call for the restructuring of the European armaments industry under the aegis of the European Community, relying on its responsibility in the fields of industrial and customs policy and research ;

3. Ensure that once the present study of the European armaments industry is completed, full use be made of the resources of the Standing Armaments Committee to assist in the foregoing tasks ;

4. Request the governments concerned to arrange for the IEPG to submit an annual report on its activities to the Assembly.

Explanatory Memorandum

(submitted by Mr. Critchley, Rapporteur)

I. *Introduction*

1. There are two vital objectives of the North Atlantic Alliance which are subject to chronic delays, if not frustration, for lack of effective unity between its European members. One is the standardisation and interoperability of arms equipment, the other is the establishment of a two-way street between Europe and North America, which is needed not only to provide a more cost-effective use of resources and increased standardisation of weapons systems but also for the psychological and political purpose of creating a better balance in the Alliance between the United States and its European allies. These frustrations and delays are a great impediment to the build-up of the defensive strength of the Alliance, which the ever-growing weight of the Warsaw Pact's offensive capability has made necessary.

II. *The problems*

2. It is, of course, an essential feature of the Atlantic Alliance that it is an association of independent, democratic states, within which are divergent trends of public opinion, in contrast to the political conformity to the Marxist ideology and the control of the CPSU, the Communist Party of the Soviet Union (commonly called Russia in the West), which characterise the Warsaw Pact. The lack of political unity between the NATO countries is reflected in every sphere of activity, diplomatic, strategic and financial ; and it is an astounding tribute to the validity of voluntary co-operation between free societies that NATO has held together as well as it has for nearly thirty years. But it is in the field of arms procurement and manufacture, with the rapidly rising costs of weapons, that the lack of an integrated European programme is most marked and its disadvantages most evident, both in regard to the Soviet bloc and to the industrial and financial strength of the United States.

3. Indeed, if any real progress is to be made along the two-way street in view of the constant development and sales-drive of the great American armament corporations, then there is no time to lose. Given the time-scale in the design and production of weapons systems, decisions will have to be taken by 1980 if new equipment is to enter service by the nineties.

4. If no progress is made towards rationalisation within Europe, large European arms or aircraft manufacturers will enter into joint agreements with American companies, such as that already signed between Messerschmitt-Bölkow-Blohm and McDonnell Douglas in September 1977, with a view to the development of a new fighter aircraft. The result of such transcontinental collaboration would be the disappearance of the independent European firms from the market. The threat that faces the European aircraft industry can best be understood when we look at the difference between American and European civil and military aircraft manufacturers. There are nineteen companies within the European Community as compared to only eight in the United States. The nineteen companies have to share a substantially lower turnover of 7.4 billion units of account in the Community, as against 17.6 billion in the United States. This can only mean that both military and civil aircraft industries in Europe are badly planned from the point of view of competition ; their research and development activities overlap thus reducing effectiveness ; costs are disproportionately high, while the benefits of economy of scale cannot be exploited. The result is that both the civil and military aircraft industries are threatened unless military procurement policy is used to promote increased collaboration across national frontiers.

5. Apart from the danger of American dominance of the European armaments industries, one of the greatest threats that faces the western Alliance is the danger of "disarmament through inflation". At a time of low economic growth, governments are reluctant to direct further scarce resources to defence even though weapon costs are growing fast and even though weapon effectiveness offers Alliance members the best hope of counteracting the ever-increasing offensive capability of the Warsaw Pact forces. Greater efficiency in weapon supply and a rationalisation of the equipment procurement process are therefore of paramount importance for western security. As Elliott R. Goodman has written : "...some observers look hopefully to a new arms technology that promises to provide inexpensive but extremely effective weapons. Their general adoption might make it possible for Europe to avoid being priced out of the weapons market, while also reducing the United States Defence Bill." [1]

6. Mr. Goodman cites the increased accuracy of precision-guided munitions and the example of their effectiveness in the Arab/Israeli war of October 1973 as evidence of the greater cost-effectiveness of future defensive short-range

1. Elliott R. Goodman : "The puzzle of European defence : the issue of arms procurement", Survey, summer/autumn 1976, page 219.

battlefield weapon systems. However, he concedes Richard Burt's argument that "both long-range and all-weather precision-guided munitions now under development will cost far more than present generation systems." [1]

Wasted money

7. Another unhappy consequence of the separate national procurement and production of land, sea and air armaments, which tend to be increasingly sophisticated and costly, is the duplication of expenditure on research. Thomas A. Callaghan, the "doyen" of writers on this subject, estimates that in 1974 Europe spent $2.5 billion on research and development, while the United States spent $7.6 billion. As the United States research and development programme duplicated virtually all European projects and included much else besides, the Alliance as a whole could save $2.5 billion if research and development projects were shared equitably between Europe and the United States instead of being duplicated. Nor is there any evidence to suggest that the overlap in research and development between the European countries themselves is any less than that between the European allies of the United States. One has only to count up the different types of weapons with the same functions in use today with the armed forces of the European members of the Alliance to have some vivid idea of the waste involved. It is not simply a matter of the procurement of non-standardised equipment, manufactured in different countries on a small scale — the training of operating and maintenance personnel, and the setting up of repair and maintenance facilities will be far more expensive as well.

8. Thus we can only conclude that if national defence budgets are taken as a yardstick, countries are getting too little defence for their money, or, if existing capabilities are used as a yardstick, countries are paying too much for what they are getting. The present policies of the European allies entail an unwarrantable waste of resources, which, if properly used, would amount to a policy of European rearmament. Up till now, the problem of producing standardised military material and reducing duplication has been seen as one of achieving specific objectives of defence policy. This has been due to the fact that discussion has taken place within organisations chiefly concerned with defence, e.g. Eurogroup, WEU and most recently the independent European programme group.

9. In other words, the new weapons technology heightens the advantages which the United States already possesses of greater resources for research and development and longer production runs. The European members of the Atlantic Alliance would without countervailing measures be even more likely to increase their dependence on the United States, thereby perpetuating the imbalance in the arms trade between Western Europe and the United States.

The European defence equipment market

10. The manufacture and procurement of aircraft, though the most costly, is, of course, only part of the whole operation of supplying the manifold defence requirements of the European Atlantic allies. They constitute (including France) a very substantial market, amounting to nearly $40 billion in 1976, compared with the arms expenditure of $77 billion of the United States. This gives us some idea in financial terms of the size of the defence transactions by members of the Atlantic Alliance who also constitute the whole of the European Community, except Ireland.

11. The following table shows the spending by countries which form part of the NATO military system on major purchases of equipment as a percentage of their overall defence spending, and from this we see that the Community countries for which figures are given spent between 10 % and 21 % of their 1977 defence budgets for this purpose, apart from Luxembourg with its very low figure. At the same time, nearly all these countries show a substantial increase for 1977 by comparison with previous years. The figures must, however, be viewed with some reservation as they only cover major purchases of equipment, and it is often difficult to draw the line accurately between the purchase of equipment and expenditure on buildings and installations. In most cases, total spending on equipment would be considerably higher than indicated in the table.

12. While American equipment (e.g. computers, precision-guided weapons, airborne missiles and aircraft) account for a sizable proportion of the European non-nuclear weapons market, the German Federal Republic, France, Italy and the United Kingdom are basically self-supporting in conventional arms. The other countries in the Community are obliged to import most of their military requirements. This aggravates the present situation in which the equipment of their armed forces is not only not standardised but for the most part not interoperable either.

13. Fortunately, there is now not only a recognition throughout NATO of the nature of the problem, but also a publicly-declared determination to achieve overdue reforms in the field of weapons procurement which is already being translated into concrete action. The problems in this field have been clearly identified. Thomas Callaghan has estimated that weapon

1. R. Burt : "New weapons technologies and European security", Orbis, summer 1975, page 256.

Spending on major purchases of equipment as a percentage of total defence expenditure

	1972	1973	1974	1975	1976	1977
	%	%	%	%	%	%
Belgium	11.4	8.4	8.8	9.1	11.1	10.3
Canada	6.1	7.3	5.9	6.3	8.0	9.1
Denmark	15.4	17.2	19.3	19.0	19.4	17.3
Federal Republic of Germany	12.3	12.1	11.9	11.8	13.2	13.3
Italy	16.9	15.2	15.2	13.9	13.1	14.0
Luxembourg	1.5	1.3	2.4	1.0	3.4	2.9
Netherlands	10.7	11.2	13.2	15.6	15.2	18.2
Norway	11.8	11.7	13.4	14.4	13.3	16.6
Portugal	7.5	4.5	3.1	1.9	1.9	2.2
Turkey	4.9	5.0	3.0	—	—	—
United Kingdom	18.6	19.3	17.2	19.3	20.6	21.8
United States	21.6	18.9	18.1	17.5	18.5	20.8

Source : NATO.

duplication [1] has cost NATO more than $10 billion per annum. He believes that the appalling waste of manpower, money, energy and materials has occurred because NATO has failed to achieve :

(*a*) common military requirements for weapons and equipment through common tactical doctrine ;

(*b*) complementary research and development projects through rationalisation of development tasks and through specialisation in development areas ;

(*c*) a diversity of weapon system options and hardware through a United States/European technology base and through savings in system acquisition and support practices ;

(*d*) larger weapons inventories at lower unit cost through rationalisation of production sources and through production runs of the combined European/American scale ;

(*e*) mutually-supporting general-purpose forces through standardisation of weapons and equipment and through common spares and maintenance logistics ;

(*f*) a balanced, collective, conventional force deterrent through military, technological and industrial interdependence and through marshalling available economic means to achieve desired military ends ;

(*g*) equitable financial burden-sharing in all defence areas through economic and technological benefit-sharing ;

(*h*) jobs and markets for underemployed defence industries through non-duplicative projects on an Atlantic development and production scale and through a North Atlantic common defence market [1].

Joint production and the arms trade

14. The cost of modern arms having risen far more than the rate of inflation, simple economics has obliged some countries to co-operate, mainly in the production of military aircraft. The very high research and development costs of aircraft, such as the Tornado, makes it virtually impossible for a single country to build such aircraft on its own. Thus joint production has become one obvious solution, and one which, whenever possible, NATO has encouraged. The other has been to reduce unit costs by selling arms abroad. This arms trade has three disadvantages : it depends upon the procurement policies of others ; it runs the risk of accelerating arms races in other continents which may lead towards involv-

1. For table on advanced missile duplication, see the previous report of the Committee : Document 671. Explanatory Memorandum, Chapter V "Production of missiles in Europe" and Appendix II (Rapporteur Mr. Wall, 29th April 1975) ; see also R. Burt : "New weapons technologies", page 4, Institute for Strategic Studies, London, 1976.

1. Thomas A. Callaghan, Jnr. : "A common market for Atlantic defence" Survival, May/June 1975, page 129, Institute for Strategic Studies, London.

ing Europe to its disadvantage, and it subordinates NATO standardisation to the competitive interests in the third world. Nevertheless, the size of the arms business makes it such an important element both in regard to the balance of trade and employment in at least two major countries of Western Europe that it could not be dispensed with. A survey made by the United States Department of Defence shows that in 1974 France was the largest arms exporter in the European Community with total exports worth $3 billion, followed by the United Kingdom with $1.5 billion, Italy with $0.25 billion and the German Federal Republic with $0.18 billion. Evidently, the sale of armaments to other countries is essential to the present structure of the French and British arms industries, even if it is not an instrument of foreign policy such as the United States' export of military aircraft to the Middle East. This is not a factor which operates in favour of a coherent European arms procurement policy.

Standardisation and interoperability

15. The notorious inefficiency, which stems from the diversity of weapons, ammunition and communications systems produced and operated, has been denounced for years by NATO's supreme commanders and contrasted with the advantages of uniformity in the armament of the Warsaw Pact. Standardisation and interoperability of arms have been under discussion virtually since 1949 and in a growing number of forums. Many standardisation agreements (STANAGs) have been negotiated and, no doubt, as the NATO long-term defence programme goes into action there will be more, particularly as the result of Task Force 7 (electronic warfare) and Task Force 8 (rationalisation). But progress has been slow and piecemeal. There is, of course, no way of removing two of the main causes of diversity, the rights of independent states to determine their defence policies, of which the French is the most extreme example, and the competition and vested interests of rival arms manufacturers in a free-market economy. All must be accomplished by agreement. But there can be no question of the urgency of the matter. The attainment of interoperability is an absolute minimum requirement. Standardisation itself is urgently needed not simply from the point of view of cost, but also to achieve proper logistic support. Non-standardised but interoperable equipment could not, in the event of damage, be repaired and supplied with spare parts in all allied countries using different types of weapons, unless those countries held stocks of spare parts, special tools, and, in many cases, had specially trained personnel. Interoperable but non-standardised equipment would therefore become rapidly unusable as a result of minor damage in situations where equipment was dependent on an allied country's supply and maintenance facilities.

III. *The approach to solutions*

16. There is broad agreement on both sides of the Atlantic that urgent measures are necessary to rectify these deficiencies and the Alliance has acknowledged the principle that there is a "need to maintain a highly developed technological scientific and industrial base in Europe whilst also seeking to achieve the closest possible co-operation in arms production and procurement between the countries of North America and Europe". This Eurogroup statement of June 1974 was officially noted by the NATO Defence Planning Committee.

17. The British Secretary of State for Defence told the House of Commons on 16th December 1974 that "there was general agreement — and in this I include my colleague the United States Defence Secretary — that progress on standardisation of equipment must involve genuine two-way traffic between the European allies and the United States".

18. By May 1975, following the circulation in official quarters of the Callaghan report on United States/European economic co-operation in military and civil technology in late summer and autumn 1974, and following the approval by the United States Senate Armed Services Committee of the Culver/Nunn amendment on harmonisation and interdependence between the United States of America and Western Europe in the field of military equipment, the NATO Defence Planning Committee agreed at its meeting of 22nd-23rd May 1975 "to pursue within the appropriate machinery the establishment of a two-way street between Europe and North America in order to provide a more cost-effective use of resources and increased standardisation of weapons systems" [1]. The then United States Secretary for Defence, Mr. Schlesinger, made it clear in October 1975 that he expected the Europeans "to put their own house in order, and to make such arrangements as would enable them to compete realistically with American industry." [2]

19. Western European equipment experts responsible to the national armaments directors examined the collective resources necessary to meet the organisational and technical challenge to the European arms industries which a genuine two-way street on American terms would present. The result of their recommendations was

1. NATO communiqué.

2. The Alliance and Europe, Part IV — the European programme group — D.C.R. Heyhoe, Institute for Strategic Studies, London, 1977, page 8.

the decision of Eurogroup Ministers at their meeting in The Hague on 5th November 1975 "to explore further the potential for extending co-operation in European armaments collaboration in an independent forum open to all European members of the Alliance". Having participated in the meeting of United States, British and German Defence Ministers in October 1975 and the French Mirage F-1 aircraft having lost out in the *marché du siècle* to the General Dynamics F-16 for the re-equipment of the Norwegian, Danish, Dutch and Belgian air forces, the French Government felt more willing to participate in a European arms procurement organisation which accorded to French strategic concepts of independence from the United States while offering to French armaments industries the benefits of additional economies of scale allied to access to useful technological information.

20. Accordingly, a meeting of the Eurogroup countries and France was held in Rome on 2nd February 1976. The independent European programme group (IEPG) [1] which was formed at that meeting has proved an invaluable forum and workshop for evolving at both a technical and political level a European armament policy which is independent of Eurogroup and of NATO's integrated military structure but which nevertheless brings together twelve European members of the Alliance (i.e. the Eurogroup members plus France) in a way which should enable them not only to harmonise their own weapon requirements but to adopt a common position in transatlantic dialogue with North Americans in the field of equipment procurement. In Europe, the work of the IEPG has made some progress, while in the United States a declared commitment to the two-way street and to equipment rationalisation has been maintained. In Congress, the House of Representatives Armed Services Committee on 24th January 1978 announced the appointment of a special subcommittee on NATO standardisation, interoperability and readiness.

21. Furthermore, the United States Administration has been pursuing similar objectives for a considerable time. Defence Secretary Harold Brown stated at a press conference on 6th May 1977 that "we need to concentrate on rationalising NATO's defence posture. That is, individual national contributions must be fitted together better. In the short run, we need the ability to interchange parts, ammunition, supplies and units of soldiers. In the longer run, we aim for more standardisation of equipment, together with the development of compatible doctrine, tactics and procedures... Such co-operation", Mr. Brown argued, "inevitably means more of a two-way street in defence procurement. The overwhelming predominance of United States arms and equipment in use by NATO forces generally should give way to greater United States military purchases in Europe. Moreover, there should be more licensing of European-designed equipment for production in the United States." [1]

1. Described in Chapter IV B below.

IV. *The international organisations*

A. *The rôle of NATO*

22. While American political determination to develop a transatlantic dialogue on armaments questions persists and while Western Europe has concerted its efforts to improve European co-operation in arms production, the Alliance as a whole has within the ambit of NATO pressed forward its studies on standardisation and interoperability. Interoperability is now accepted as essential throughout the Alliance, not least by the United States. Standardisation, however, is regarded as a desirable objective for the more distant future — the late 1980s or 1990s. Dr. Walter Laberge, the previous NATO Assistant Secretary General for Defence Support, used to argue that "competition makes western technology great" and it is accepted within NATO that the military benefits of standardisation must not be allowed to be outweighed by any drawbacks inherent in monopoly supply.

23. Improved co-ordination of research and development between the members of NATO is necessary. This will be a difficult task which would be achieved by the creation of a supranational agency to allocate research and development tasks and resources. Information would have to be stored which for primarily commercial considerations is bound always to be a sensitive issue.

24. Secondly, for interoperability, the standardisation of component parts rather than of systems is of prime importance. One of the main difficulties that NATO has faced in this regard is that national operational requirements are not harmonised by NATO. Nevertheless, strenuous efforts are made to achieve the maximum rationalisation of arms procurement.

25. Following the Atlantic summit in London in the summer of 1977, NATO launched a long-term defence programme in which ten areas of particular importance (task forces) for the next ten years were specified such as readiness, reinforcement, etc. [2] The long-term defence pro-

1. "NATO defence co-operation", press conference with Harold Brown, Survival, July/August 1977, page 179, Institute for Strategic Studies, London.

2. The task forces are listed at appendix.

gramme draws up specific objectives and identifies national participation and costings. It consists of long- and medium-term elements. The medium-term one overlaps the normal five-year rolling programme in which force goals for up to five years ahead are established and biennially reviewed.

26. One of the sector studies is known as Task Force 8 and deals with rationalisation, i.e. the search for more efficient use of NATO resources in the field of standardisation and interoperability of military equipment; its recommendations were transmitted to the capitals of the member countries in preparation for a discussion during a ministerial meeting of the Defence Planning Committee in mid-May, followed by the Washington summit meeting. This task force has examined the way NATO plans its equipment reprovisioning; whether there should be more central planning; whether changes in procedures are needed to implement standardisation and interoperability; and whether changes are needed in staffing in NATO to implement standardisation. It has also examined a few other spheres, such as the question of intellectual property rights (the study of problems concerning ownership of patents, payment of royalties for licences, etc., in which joint ventures very often become bogged down) and other schemes to improve standardisation by having more countries collaborating in the production of the same defence equipment.

27. The recommendations of this task force are considered to be "reasonable and modest" at NATO. Certain countries, including the United States in particular, consider that the recommendations should have gone further but, in general, all the countries agree on the fact that they "will oil the wheels of the organisation according to one Atlantic source". The three main recommendations of the task force are[1]:

> *"The efforts to implement the STANAGs should be stepped up*
>
> For many years, through the Military Agency for Standardisation (in which France participates), the NATO countries have concluded standardisation agreements — STANAGs — concerning the standardisation in particular of the components of military equipment. Task Force 8 considers that more pressure should be exercised on the national governments to implement them. The first stage will consist in asking the main NATO commanders (MNC) why certain STANAGs have not been implemented.
>
> *Continuation of the PAPS studies*
>
> NATO would like to establish a long-term armaments planning system. About two years ago, the foundations were laid of a PAPS (periodic armaments planning system) which combines the present and future armament requirements of the allied countries and also examines the requirements of future warfare so as to enable the member countries to collaborate to a greater extent in developing armaments. The PAPS system is only in its initial stage, that of the NATO armaments planning (NAPR). This essentially consists in reviewing national military equipment schedules (replacement dates, etc.) against NATO requirements for standardisation to enforce maximum interoperability.
>
> NATO has chosen six test areas. The two naval spheres concern underwater weapons — torpedoes and sonobuoys (for detecting submarines); the two army fields concern anti-tank weapons and mortars; and the two air force fields laser illuminators and cluster bombs. The results of this first test will not be known until the end of the year. Subsequently, it is hoped that it will be possible to go on to the second stage of the PAPS system, i.e. to group together the national countries with respect to NATO programmes before they embark on their own national plans for the development of military equipment. In its conclusions, Task Force 8 endorses the PAPS studies.
>
> *A new review of national armaments planning*
>
> There is a suggestion to set up a kind of high-level committee (probably at the level of the deputy national armaments directors) to co-ordinate and even exercise pressure on the main NATO armaments groups, for example the army, navy and air forces research groups. It might be said, however, that the CNAD (Conference of National Armaments Directors, which meets twice a year) is already accomplishing this co-ordination task. It is considered, however, at NATO that the CNAD, being formed by experts at a very high level, is often far too removed from the daily work of the individual armaments groups."

28. The long-term defence programme was endorsed at the Washington summit meeting of the North Atlantic Council on 30th and 31st May 1978, but France, represented by its Foreign Minister, did not subscribe to that part of the communiqué. The work of Task Force 8 was thus referred to:

1. From Atlantic News, No. 1015, 5th April 1978.

"Rationalisation

13. The objective is to achieve economic savings and enhanced military efficiency through increased standardisation and interoperability. Programmes include development of new procedures for systematic long-range armaments planning, new procedures for the improved formulation and utilisation of standardisation agreements, and continuation of the work undertaken by the Conference of National Armaments Directors in the field of intellectual property rights. In the development and acquisition of the equipment recommended in the long-term defence programme, co-operative programmes will be pursued to the greatest extent possible. Nations have also endorsed the need for the transfer of technology between member countries where such transfers contribute to the furtherance of standardisation/interoperability of NATO defence equipment."

29. Although it does not participate in the long-term defence programme, France through its continued membership of the NATO Conference of National Armaments Directors remains a participant in the arms co-operation activities of the Alliance. Some members of Task Force 8 attend IEPG meetings, but no formal decision has yet been taken on the method of informing the IEPG of the work of the task forces ; certainly the IEPG also is an essential tool of weapon rationalisation.

30. However, there are inherent drawbacks to be overcome in any economic rationalisation of arms procurement. Buying equipment from abroad entails the export of funds and jobs to the supplier nation. Of course, equipment designs can be purchased and licence construction initiated, but then the economies of large-scale production are lost. Task Force 8 is engaged in the resolution of these problems. For example, countries can build sections of the equipment to be procured. There can be an allocation to individual countries of responsibility for the supply of different categories of weapon systems. Common research and development programmes can be instituted although it is unlikely that they would produce major financial savings — perhaps a maximum of 10 %. However, joint production can be very cost-effective, but only for really major programmes such as warships, aircraft and guided weapons.

31. From all this, the two basic reasons for standardisation stand clear — military effectiveness and economic logic. The logistic simplification inherent in weapon standardisation is a very important military consideration. The principal economic considerations are the economics of scale in production and savings in research and development. The work, therefore, of Task Force 8 (defence support) covering the equipment and support of NATO forces has great potential. Both the support and equipment functions offer scope for savings as does the whole area of logistics. However, for the immediate future, the achievement of a good measure of interoperability is vital such as the ability to turn round allied aircraft on the completion of a sortie, and harmonisation in the field of ammunition, communications and fuel.

B. *The independent European programme group*

32. The IEPG which is only some two and a half years old [1] was established under the pressure of increasing weapons sophistication which prevents any European country meeting its own weapon requirements alone, and from the desire to include France in a purely European armaments forum with all other European NATO members. The IEPG is attempting to achieve practical results, particularly to present agreed projects to the participating governments. The IEPG is seeking to create a balance between the armaments capability of the United States and Europe by concerting the European allies' efforts in the field of defence equipment.

33. The greatest difficulty which the IEPG faces is in achieving a common position without damaging the varying national interests of the twelve member countries. The problem of balance between the nations with advanced defence industries and the others is especially intractable and offset considerations are often crucial to the agreement of joint projects.

34. The IEPG meets on two planes. The first is at under-secretary of state level [2] under the chairmanship of the Italian Under-Secretary of State for Foreign Affairs and takes place once a year in Rome [3]. The second level is technical. The national armaments directors meet under Italian chairmanship (originally Admiral Mainini, now General Moizo) in Rome. Under it, there are three working panels. The first (the equipment planning panel) identifies areas for potential co-operation and compiles equipment replacement schedules. The second (the specific projects co-ordinating panel) works out the machinery of collaboration. The third (the defence economics and procedures panel) identifies differences in national company laws, export regulations, etc., and proposes means of harmonising them. *Panel I* has collated equipment replacement schedules, transmitted them to NATO and

1. See paragraph 20.

2. Some countries being represented by (political) under-secretaries of state, others by senior officials.

3. At the meeting in Rome on 6th and 7th November the question of the chairmanship of IEPG is expected to be discussed.

received comparable schedules from the United States and Canada ; *Panel II* has reached an advanced stage in some projects and a number of agreed collaborative programmes are likely to be started soon ; *Panel III* has been operating in the very delicate area of economic compensation and procedures.

Transatlantic dialogue

35. Between the three panels and the national armaments directors, there is an ad hoc working group on transatlantic dialogue. The IEPG has identified four topics for discussion with the North Americans :

(*i*) the preparation and offer of a list of equipment which the West Europeans feel that the United States and Canada should consider purchasing for their troops in Europe ;

(*ii*) a list of supplies for American and Canadian forces in Europe ;

(*iii*) the identification of technical and legal obstacles to the entry of European equipment to the North American market ;

(*iv*) the exchange of information — e.g. replacement schedules.

36. Both the IEPG and North Americans have agreed that a working group on obstacles be set up, but the latter wish to establish at the same time two further open-ended working groups. The first would examine possible rationalisation of research and development and production. The second would examine industrial co-operation. However, the IEPG is not yet ready to respond to these two initiatives. Rationalisation is already being studied by the Conference of National Armaments Directors in NATO and there is a danger that these suggestions, if taken up, could lead to a duplication of work being done already in another forum — particularly as France participates in NATO's CNAD. Panel I and Panel II of the IEPG are therefore making a careful study of the American proposals before the IEPG responds. It has been agreed that exchange of basic information between the IEPG and the North Americans is adequately covered by the production of the combined equipment replacement schedules.

37. At its meeting on 2nd and 3rd October 1978 the IEPG at the level of national armaments directors welcomed recent United States proposals for complementary competitive development of families of weapons (designed to avoid duplication of development projects in Europe and the United States), but called for more information at the CNAD meeting on 24th and 25th October. The IEPG also stressed that the bilateral memoranda of understanding now being concluded between the United States and its European allies should not jeopardise efforts in the IEPG to develop specific equipment projects at the European level.

38. At the present time such memoranda of understanding have been concluded between the United States on the one hand, and France, Germany, Italy, the Netherlands, Norway and the United Kingdom on the other. Others are being negotiated with Belgium and Denmark as well as Canada. These memoranda on mutual trade in defence equipment are designed to waive the Buy American Act, to enable the Europeans to sell defence equipment in the United States to the same value as that sold by the United States in Europe.

39. The success of the IEPG will depend on its ability to speak with a single voice and on the ability of the United States and Canada to develop a truly balanced trade with the Europeans in armaments. In this regard, the attitude of the United States Administration alone will not be critical — the practical attitude of Congress will be crucial also, as the matter of the selection of a German or American for the new United States army main battle tank has shown.

The European Defence Industries Group (EDIG)

40. This body, established by the major armaments firms to make contact with the IEPG, meets under the chairmanship of Admiral Azzoni of Oto Melara. Its aims are :

(*i*) to make proposals to and react to suggestions from the IEPG on industrial matters ;

(*ii*) to consider the possible association of groups of companies to implement IEPG programmes ;

(*iii*) to offer industrial expertise for use if necessary by the IEPG ;

(*iv*) to co-operate more closely together with a view to making better use of available financial and technical resources.

The EDIG informs the IEPG on its proceedings and keeps in touch with progress in the work of the IEPG panels and group, although no formal relationship between the EDIG and IEPG has yet been agreed.

C. *The rôle of WEU*

41. The Council has instructed the Standing Armaments Committee to carry out a study in three parts. The first part is to define and list European armaments and arms manufacturers. This task upon which the SAC and IEPG have worked together is now complete.

42. The second part is to define the legal status of the various armaments industries to define which companies are private, which public, which transnational and which nationalised. Also the government ordnance factories have had to be listed. This report is complete and has been sent to the respective national authorities.

43. The third part concerns the economic facts about the European armaments industries. To avoid all danger of duplicating the work of Panel III Sub-Committee 4 of the IEPG in this field, its tempo has been carefully phased and method of working appropriately organised.

44. On the question of staffing, there is flexibility in the composition of delegations to the Standing Armaments Committee. For example, economic experts are invited to attend. An economic specialist on the staff of the French DGA was attached to the SAC. Likewise, two Belgian economic experts have been attached. (The IEPG, in contrast, has no permanent secretariat and is dependent on the goodwill and co-operation of member governments).

45. At the present time the SAC and the IEPG are seeking to obtain from national sources the economic and commercial data required for the study, taking into acount considerations of commercial or governmental confidentiality. The means required to obtain the information are different for different countries and industrial sectors. For example Germany, where most of the equipment firms are free enterprise concerns, requires a different approach from the United Kingdom where much of the armament industry is nationalised. The kind of data that the SAC has been seeking for the study concerns technology, co-operation, employment and financial inputs.

46. WEU like the IEPG meets various kinds of difficulty from national quarters. WEU is mostly engaged in paper studies, not in making decisions at the present time on specific armament projects.

D. *Panavia Tornado — A case study in collaborative procurement*

NAMMA

47. The NATO Multiple Combat Aircraft Development and Production Management Agency is responsible for the day-to-day management of the programme for the MRCA, now known as the Tornado, which is being produced for the Luftwaffe, German navy, Italian air force and the Royal Air Force.

48. The top policy-making body responsible for the Tornado programme is the trinational policy group which is constituted twice a year at national armament director level. The policy group gives guidance to the board of directors on essential and principal matters of policy and resolves those issues which can only be decided at a political level.

49. The more routine control of the project is exercised by the board of directors upon which official representatives of the three participating governments sit together with a representative of the Secretary-General of NATO, although he rarely attends. Each country has one vote and decisions are taken unanimously. NAMMA is located at Munich. The staff of NAMMA is 240 with 107 from Britain, 109 from West Germany and 27 from Italy, reflecting broadly the governments' participation in the programme.

50. NAMMA is set up as follows :

(*i*) office of general manager and deputy general manager ;

(*ii*) programme and configuration control ;

(*iii*) military factors division ;

(*iv*) systems engineering ;

(*v*) production and quality assurance ;

(*vi*) budgets and contracts ;

(*vii*) administration and personnel ;

(*viii*) office of the financial controller ;

(*ix*) office of secretary to board of directors.

51. Britain has ordered a total of 384 Tornados of the interdictor/strike variant and air defence variant ; West Germany has ordered 322 aircraft for the Luftwaffe and navy and Italy 99 aircraft, both the latter being the interdictor/strike variant. Two production batches have been authorised. From the second production batch, Panavia will become the prime contractor and all contracts will be authorised through them.

52. Well over half of the aircraft's flight test programme has been completed. The first instructors for the Tornado will be trained at MBB's military division airfield at Manching and possibly all subsequent ones at a joint operational conversion unit, RAF Cottesmore. It is possible that an Anglo-German weapon training unit will be formed at RAF Honington.

53. NAMMA is the trinational procurement agency for spares. The three countries will exchange defect data with NAMMA establishing interim trinational repair procedures.

54. Co-operation has, however, had its price as well as its advantages. There are of course additional administrative and communication costs, although no single nation could have afforded to build the aircraft alone. Furthermore, it has not always been possible to select the optimum equipment and in some instances,

out of consideration of equity in work sharing or for operational reasons, national equipment fits have been demanded.

55. Stores commonality also between the customer services will not be as good as had been envisaged because of the need to maximise the utilisation of respective countries' existing weapon stocks.

56. The experience and expertise of NAMMA should be harnessed for the procurement of a European successor to the Tornado. In this regard, the time-scales for the two clear potential national inputs to such a project — the Royal Air Force's AST-403 and the Luftwaffe's *Neue Kampf Flugzeug* — must be resolved.

57. The Tornado approach to collaboration has proved basically sound. Pure subcontracting as with the F-16 programme is less satisfactory. The Tornado system of procurement ensures that continuous in-service development is possible and that expertise is spread among the partner companies. The procurement system by contrast used for the British Phantom made in-service development difficult.

58. A dilemma remains over work sharing, Should it in the future be based on proportionality of financial input as with the Tornado or should partner nations in a successor project be able to play down social and political considerations by specifying the most cost-effective options on airframe and engine construction and equipment ?

59. Lessons also need to be learned from the experience with Tornado over the aircraft's RB-199 power plant which was developed at the same time as the aircraft. However, engines take usually three years longer to develop than a new airframe and the aircraft's development has been consequently delayed.

View of Messerschmitt-Bölkow-Blohm

60. Clearly, one of the great benefits of a multinational combat aircraft programme is that the differing expertise of the participating countries can ensure an optimised joint approach to the project.

61. If a new joint combat aircraft programme were initiated by the partner companies, the design team should be centralised, but final assembly and flight test should be decentralised as with Tornado. Separate flight testing increases the overall cost but speeds up the development programme. The friendly rivalry of the respective flight test establishments is a spur to progress.

62. If a new military aircraft were initiated with the United States, there would be difficulties changing all the standards from metric. However, if a new project were initiated by the Panavia partners, some 20 % of the development time would be cut.

63. The repair of aircraft sections made by one of the other partner nations usually presents no problem except when a return to the jigs is required. Because final assembly takes place in each of the partner countries, general expertise on the aircraft is satisfactorily spread and shared.

64. NAMMA's rôle in ensuring a degree of commonality between the aircraft in service with the different services is very important. The co-location also of NAMMA and Panavia in the same building is extremely useful. However, NAMMA can be slow in reaching decisions and should have more authority, likewise Panavia should be given more authority over the resolution of technical problems.

65. The choice of equipments specified rests with the partner nations. When a system manufacturer is chosen, he may choose two subsystem collaborators in the partner countries. The aircraft would not have been built in the view of the MBB experts if design leadership had rested with one airframe manufacturer.

66. The project is thought to be especially helpful to Italy industrially. Almost every Italian aerospace company is involved in the aircraft in one way or another. The employment-generating effect of the Tornado programme in Italy is considerable. Furthermore, although Italy contributes to only a 15 % share of the work, Italian industry benefits fully from sharing technical knowledge and acts as a full partner in the aircraft's management.

Panavia

67. The long-term significance of the Panavia Tornado programme has been well summarised by Mr. F.W. Page, Chairman of Panavia, at a press conference at the Hanover air show on 26th April 1978, who, when asked whether Panavia would undertake further projects now that the Tornado was in production, said :

> "The answer must be Yes, if and when our customers agree on their future requirements. Panavia represents the first determined and successful attempt by three major European nations to get together to rationalise their defence requirements and to co-produce a major weapon system to meet those requirements. It is a huge step forward in the evolution of European commonality which has important ramifications in many important areas such as finance, tax and company law, as well as in supply, logistics, operations and training. It is therefore inconceivable that this pioneering effort should in future be

thrown away and wasted. Indeed, we hope it will expand so that Panavia will include other nations." [1]

V. *The view from national capitals*

A. *Belgium*

68. The greatest constraint on Belgian weapons procurement lies in the fact that Belgium's defence requirements are well below its industrial capacity and it is therefore difficult for it to develop or produce defence equipment in general, except for telecommunications equipment, small arms and munitions of all calibres which are Belgium's principal exports in this field.

69. There is no specific research and development allocation within the Belgian defence budget — such research as does take place is purely on the scientific level and not directed towards particular projects or weapons. Weapon research at *Fabrique Nationale* is financed privately. Where possible, Belgium is trying to participate in joint research and development as has been done with the new minehunters which are being developed with France, Germany and the Netherlands.

70. Belgium hopes that the IEPG will prove helpful and that both European co-production and transatlantic co-production (two-way street) will be possible. If the Belgian armaments industry produced only for the Belgian market, the production runs would be too short and unit costs too high. Belgium has therefore to be involved in co-operative ventures and the most effective were co-production programmes like the General Dynamics F-16.

71. The creation of a European Armaments Agency would be desirable so long as competition is retained. For a small country like Belgium, offset considerations are of crucial significance in the work allocation for any jointly-agreed weapon programme as are social considerations such as employment.

B. *France*

72. The percentage of the defence budget allocated to personnel and associated functions is 57 % and the percentage allocated to equipment 43 %.

73. Of the expenditure on equipment, 25 % is spent on research and development of which 5 % is research in the pure sense and 20 % is development expenditure. These figures are on the old basis of budgetary computation whereby the cost of service pensions is not included in the defence budget.

74. A summary of the major equipment replacement programmes for the French armed forces for the next ten years is at Appendix III.

Air force

75. To replace the Mirage 3 and Mirage F-1 interceptors, the Mirage 2000 is entering production in 1982. To replace the Jaguar attack/strike aircraft, a new aeroplane would be required. Discussions are being held with the British and West German Ministries of Defence on this project. In addition, a new generation of air-launched guided weapons would be required.

Army

76. The principal requirement is for a new battle tank to replace the AMX-30.

Navy

77. The Foch and Clemenceau aircraft carriers will need to be replaced. This is so far only at the planning stage. No firm decisions have yet been made. New anti-submarine and anti-aircraft frigates will be required throughout the next decade. A second generation of surface-to-surface guided weapons to succeed the Exocet will be required.

Strategic strike force

78. Multiple warheads need to be developed as a matter of urgency for France's submarine-launched ballistic missiles, and the first of a new generation of ballistic missile submarines is to be constructed to enter service in 1985.

French view of independent European programme group

79. Progress is difficult with twelve nations participating. There are sometimes divergent views and interests. For example, the more industrialised nations with highly developed armaments industries have different interests and criteria to apply to the questions of arms procurement from those nations which have no armaments industries of their own.

80. A policy of deliberate preference in favour of European equipment is essential if the European armaments industry is not to be overwhelmed by American imports. The United States enjoys the advantage of scale, great research and development funding and protection (the Buy American Act).

81. Before the independent European programme group was initiated all other avenues

1. Panavia press release, Munich, 27th April 1978.

of co-operation had been exhausted. France would like the SAC of WEU to have more work to do also.

C. *Federal Republic of Germany*

82. From experience already derived, particularly from the Panavia Tornado and Sepecat Jaguar consortia, it is clear that Europe has the capability to carry out future military aircraft programmes.

83. The three leading nations in the aerospace field, France, West Germany and the United Kingdom, will all be looking for new combat aircraft around the 1990s. France and the United Kingdom will be seeking a successor to Jaguar, whereas West Germany will be seeking a successor to the Phantom.

84. The aircraft industry in the Federal Republic values outside technical support for a European programme, hence the usefulness of the support from the McDonnell Douglas company which MBB is currently receiving and of the support which BAC in Britain receives from the Grumman company.

85. An industrial approach to arms procurement rationalisation is preferred. However, it has to be borne in mind that in the Federal Republic, the armament industry is in private hands and cannot therefore be ordered to rationalise by the government. The government can only encourage rationalisation by a judicious administration of its powers of project sponsorship and funding.

86. The Federal Republic of Germany is probably better suited than the United Kingdom to giving up some of its authority to a supranational body like an international armament agency. The United Kingdom is in a more ambivalent position having ties with both Europe and with the United States.

87. West Germany's defence expenditure is rising at 3.5 % per annum, but because of inflation the real increase is smaller.

88. The two-way street has already been initiated. First on the question of a gun for the United States army's new main battle tanks, the American Administration has decided in principle to purchase the German gun for all tanks procured beyond number 3,000 on the production line.

89. Over Roland II, Germany has had to persuade the American authorities that full Americanisation of the system is against United States interests in view of the considerable benefits of standardisation with the weapons with which the French and German armed forces are equipped.

90. The lack of a united policy to concert the production in Europe of weapons which could be offered to the United States is especially regrettable. In three particular areas the Europeans could develop weapons of the highest quality — third-generation anti-tank missiles, air-to-air missiles and air-to-ship missiles. The Europeans could develop their systems in parallel with those being developed by the United States with the selection being decided by a competition.

91. The current difficulty has been that the United States has offered to participate from the start in arms programmes in Europe while continuing to develop its own competitor weapon systems.

92. As far as West Germany is concerned, all its new projects will be done co-operatively and the Federal Republic will do its very best to concert its requirements with those of its allies. In the field of small projects however, such as telecommunications and small arms, the emphasis within NATO is on standardisation and they could initially be developed separately with a competitive final selection.

D. *Italy*

93. Italy gives tangible support to the IEPG and encourages its activities which are now concentrated on two basic sectors, transatlantic dialogue and the drafting of specific projects; where the transatlantic dialogue is concerned, it has become apparent that the parties wish to move on as quickly as possible to the concrete stage of achievements. In comparing positions, it became clear that there are still different positions between the two sides of the Atlantic.

94. The tendency of the North American allies to speed up the dialogue and extend the framework to cover wider subjects is limited by the IEPG's need in each case to harmonise its position beforehand within the organisation so as to speak with a single voice, which the North Americans expect, moreover.

95. In any event, Italy believes that in view of the complexity of the dialogue it must take the form of continuing negotiations but on a pragmatic and gradual basis; differences of opinion which are inevitable at the outset when tackling matters which involve the parties' fundamental interests must not lead to discouragement.

96. Progress in the dialogue assumes parallel progress in the constructive work within the IEPG where the greatest effort is needed, i.e. carrying out meaningful projects on a collaborative basis.

97. In this context, it seems essential for the IEPG's work to be given constant and effective political impetus by member countries with a

view to carrying out a few wholly IEPG projects without delay. Italy has taken appropriate steps to ensure that its national representatives in the various working groups concentrate their attention on specific procedure relating to every aspect of co-operation, recently confirmed by the national armaments directors, with a view to finding concrete and effective means of speeding work up.

98. The coming months can be used for continuing the present work of shaping and composition which, in spite of the various levels of agreement to be successively obtained, should allow the major difficulties to be overcome and even more effective forms of co-operation to be found.

VI. *Conclusions*

99. Mr. Leo Tindemans in his report on European union suggested that consideration should be given to the establishment of a European armaments agency. Likewise the Commission of the EEC's action programme for the aeronautical sector (Spinelli report) presented to the Council of the European Communities on 30th October 1975 advocated a similar body for the procurement of military aircraft. Also the European Parliament resolved on 15th December 1975 that "an agency ultimately aimed at the joint manufacture of weapons meeting the requirements of the NATO states" be established.

100. More recently there was the tabling in the European Parliament on 15th December 1976 by Mr. Berkhouwer of a motion for a resolution on co-operation in the armaments sector, in which he referred to the Tindemans proposal for the establishment of a European armaments agency and the importance for the attainment of a common European industrial policy of rationalisation of the European armaments industry, and called on the Commission of the European Communities to submit to the Council an action programme for a European policy on the procurement of armaments.

101. This text was referred to the Political Committee of the European Parliament and Mr. Egon Klepsch appointed as Rapporteur. His report of 8th May 1978 on European armaments procurement co-operation (Document 83/1978) reiterates the call for the Commission of the European Communities to draw up an action programme to define "potential responsibilities concerning the development of a common armaments procurement policy within the overall framework of a common industrial policy". It even considers as "indefensible any further attempts to establish a common industrial policy which does not include this key sector". On 14th June 1978 the European Parliament adopted the resolution in the Klepsch report calling on the European Commission "to submit to the Council in the near future a European action programme for the development and production of conventional armaments within the framework of the common industrial policy".

102. While Mr. Davignon, replying for the Commission, considered that armaments production and trade could be the subject of a Community approach, either in the framework of commercial policy (customs) or of industrial policy, reactions of governments so far have been divided. Mr. de Guiringaud, the French Minister for Foreign Affairs, on 23rd June considered Mr. Davignon's interpretation of the Rome Treaties "open to criticism", while Mr. Simonet, Belgian Minister for Foreign Affairs, said on 20th July that the Belgian Government considered it "desirable" that the institutions of the Community should pay attention to the armaments industry. The Klepsch report was discussed by the IEPG on 3rd October 1978, which found it an "interesting proposal" according to press reports.

103. What is surprising is that the pursuit of common industrial objectives in the context of a joint policy for the procurement and manufacture of arms should have been neglected so long.

104. There is surely a strong case for the European Economic Community to be concerned in this important aspect of the economies of its member states. All the members of the Community, except the Irish Republic, are also members of the North Atlantic Alliance. So are Greece, Turkey and Portugal whose admission to the Community is on the way. They are the same countries though associated for different purposes. The Treaty of Rome makes no reference to defence, nor have the organs of the Community — Council, Commission, Court and Assembly — any military function. This is well understood. It is the Treaty of Brussels and the North Atlantic Treaty which provided concurrently for the collective defence of the same group of European powers, though many of us believe that the failure of the attempt to create a European defence community in 1954 marked a tragic set-back for the idea of Europe. The designation of specific weapons, standardisation agreements, joint production and all the technical aspects of NATO's long-term defence programme must remain the responsibility of the Military Committee of the Alliance, assisted by the Military Agency for Standardisation, the Conference of National Armaments Directors and the international bodies mentioned above, notably the IEPG, which has the practical merit of including France, as well as the other NATO members. But, none of these bodies, whose aim is to achieve particular objectives of the defence programme, is competent to devise a common policy for the procurement and manufacture of arms as a necessary part of the economy and

industrial life of the nations concerned. The EEC is the only European institution in a position to bring about the restructuring of the European arms industry, which is vital to the introduction of a common procurement policy as well as to systematic co-operation and interchange with the armaments industry of the United States, which could make the two-way street a permanent feature of the Atlantic Alliance. Hitherto, the Community has suffered from having no regard to the armaments industry in Europe. In 1976, 22 % of all the research and development funds of its governments were accounted for by that industry, so that, without it, a common industrial policy cannot be established. Secondly, the co-ordination of procurement and manufacture of weapons by the national defence establishments has, so far, resulted in a number of fragmented, individual projects because there was no coherent organisation on the production side.

How the task might be discharged

105. Were the EEC to set up, as is suggested, a body to co-ordinate the procurement and manufacture of the arms of its member states, which would be either a section of the Commission, or an agency responsible to it, what would be its *modus operandi?* It would be through the Ministers of Defence sitting on the Council of the Community that it would receive definitions of the military material needed for a given period, the Ministers of states represented in NATO's Defence Planning Committee basing their requirement on their commitments to the medium- and long-term defence programmes of the organisation, the French and Irish Ministers indicating the common projects, if any, in which their governments wished to participate. It would then be a question of identifying and co-ordinating the expertise available in each of the existing national arms industries and firms contracting for governments. On the industrial side the problems would not be essentially different from those of industrial policy in general, in much of which the European Community is already involved — location of works, employment, worker participation, investment, social welfare and the environment.

106. There would be a number of financial, technical and legal problems involved in a system of co-ordinated production of armaments. For example, guarantees would be needed to protect some countries against losses in their balance of payments, incurred in the short term. For example, this would not necessarily apply to individual projects, but, on the basis of several projects over a number of years, an effort ought to be made to operate the principle of fair return. Procurement, that is the purchase of arms and technical know-how from countries outside the Community, should also come under the responsibility of the Community's agency, in order to protect fair competition, and ensure, as far as possible, equality of advantages (with the exception of the particular United States legislative restrictions on the transfer of nuclear devices).

107. This would be necessary, particularly in the longer term, so as to prevent a few European undertakings from acquiring a virtual monopoly through the restructuring of industry that must take place. Such companies should continue to live at risk. Co-operation on such procurement would also be necessary as part of any intercontinental collaboration between Europe and the United States. Through close collaboration on procurement, it would be possible to make purchases of American arms and equipment conditional on equivalent purchases by the Americans from Europe, so establishing the desired two-way street.

108. Another important area where the Community could make its influence felt is the financing of industrial research and development, undertaken in co-operation between firms in several member states in areas of special interest to the armaments industry as well. Most research and development projects in the aircraft, computer and electronic industries fall into this category.

109. Furthermore, the creation of a common fund to facilitate structural change would be a natural task for the Commission. Consideration might also be given to whether or not the Community should play some part in building up common buffer stocks of strategic raw materials so that, in a crisis, production could be maintained in both defence and civilian industries.

110. Having regard to the existing overlapping and wastage of money on research and development in the production of armaments, the co-ordination of research and development suggests itself as a subject particularly suitable for an arms-production agency of the Community. This is a prickly subject, involving not only the expertise, *amour-propre* and vested interests of many pundits in each country but also patents and national security legislation.

111. Evidently, the research findings of a particular project sponsored by the Community ought to be fully accessible to all those undertakings taking part in it. But there is also the question of whether research findings should be available to the participating countries for onward transmission to other enterprises, in cases where organisations from only some of the countries taking part are involved on the manufacturing side. If this cannot be implemented, steps should be taken to ensure that, over a period of time, projects are allocated in such a way that individual participating countries do

not acquire a monopoly of advanced technology in one or more areas.

112. Other problems which would arise from the intervention of the Community in the restructuring of the European arms industry would include: rules of compensation, particularly for loss of exports; the legal framework for co-operation between undertakings, both in respect of company law and the law of contract, would need revision; and, in the same way, the legal basis for the allocation of research and development contracts and production contracts, including, in particular, common rules for adjudicating tenders, should, if not actually determined within an EEC framework, be worked out in collaboration with the Commission.

113. The real difficulty of any such plan outlined above, is not detail but principle. We are dealing with sovereign, independent states, all of whom to a greater or lesser extent, regard a nationally-owned arms industry as going to the heart of their concept of sovereignty. It is clear that such co-operation as there is at present between the member states of the EEC on the procurement and manufacture of arms is not the result of any coherent, long-term policy, but relates solely to isolated projects, where the partners have usually had to choose between collaboration or abandonment of the project.

114. Has Europe the political will to recommence its journey towards unity? There are three traditional routes: unity through conquest, which has been tried and failed; unity through economic integration, which has run into the sands, and unity through the fear of a common enemy. Soviet rearmament has increased the perception of the threat in Europe. But are we sufficiently afraid to begin the necessary process of dismantling the bastions of our national sovereignty? The idea of a European defence community evaporated, as we know, in the 1950s, when Germany joined its former enemies in the American-European Alliance. Today, we should start to talk once again about the defence of Europe in the context of Europe. A Community-wide arms procurement and manufacture agency, the purpose of which would be to restructure the European arms industry, is, in the long term, the only way in which Europe can retain the ability to make arms, which it needs today, and by so doing, guarantee its own independence.

VII. *Opinion of the minority*

115. The report as a whole was adopted in Committee by 7 votes to 6 with 3 abstentions. A minority of the Committee was opposed to involving the European Community in armaments industry policy, and some members would therefore have deleted paragraph 2 of the draft recommendation. Some members believed such involvement would be divisive of the Alliance, possibly isolating the United States or the allied European countries which are not members of the Community, or might impose too great a burden on the Community or undermine the IEPG; others again doubted the legality of the proposal. Several were anxious to ensure greater parliamentary control — at national and international level — of the armaments industry. The view was also expressed that some proposals of the report could lead, through standardisation, to a new integration which was held to be detrimental.

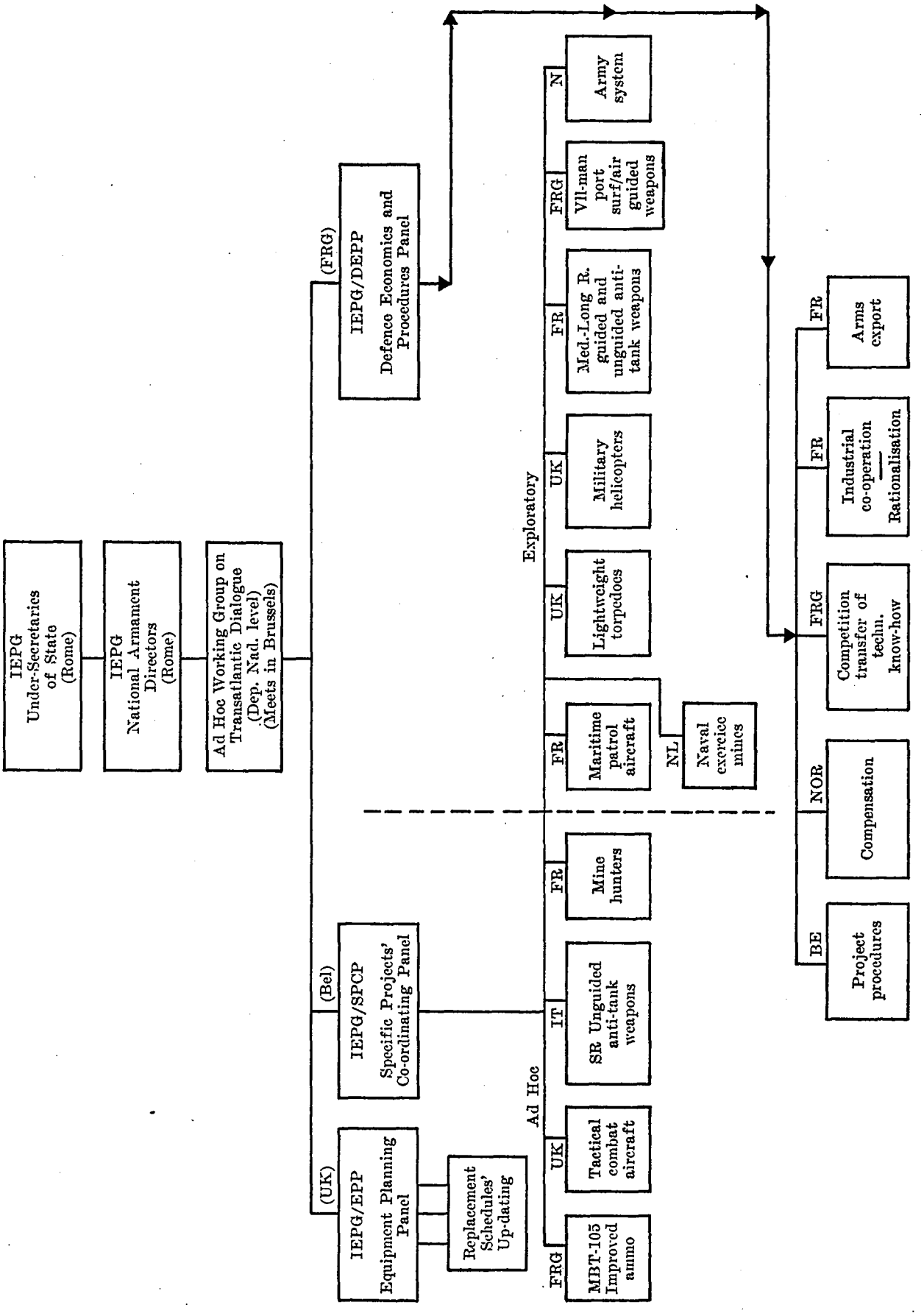
APPENDIX I

The ten action areas under the NATO long-term defence programme on which task forces have been established [1]

1. Readiness
2. Reinforcement
3. Reserve mobilisation
4. Maritime posture
5. Air defence
6. Communications, command and control
7. Electronic warfare
8. Rationalisation
9. Logistics
10. Theatre nuclear modernisation

1. See paragraphs 25 *et seq.* of the explanatory memorandum.

APPENDIX II


IEPG
Under-Secretaries of State
(Rome)
IEPG
National Armament Directors
(Rome)
Ad Hoc Working Group on Transatlantic Dialogue
(Dep. Nad. level)
(Meets in Brussels)
(FRG)
IEPG/DEPP
Defence Economics and Procedures Panel
(Bel)
IEPG/SPCP
Specific Projects' Co-ordinating Panel
(UK)
IEPG/EPP
Equipment Planning Panel
Replacement Schedules' Up-dating
Ad Hoc
Exploratory
FRG
MBT-105 Improved ammo
UK
Tactical combat aircraft
IT
SR Unguided anti-tank weapons
FR
Mine hunters
FR
Maritime patrol aircraft
NL
Naval exercise mines
UK
Lightweight torpedoes
UK
Military helicopters
FR
Med.-Long R. guided and unguided anti-tank weapons
FRG
Vll-man port surf/air guided weapons
N
Army system
BE
Project procedures
NOR
Compensation
FRG
Competition transfer of techn. know-how
FR
Industrial co-operation — Rationalisation
FR
Arms export

APPENDIX III

Future equipment programmes

(a) Belgium

Equipment to be replaced in the future in the three armed forces subject to the approval of the various supervisory bodies :

(*a*) improvement of six Hawk (Helip) batteries ;

(*b*) replacement of ±1,200 infantry armoured vehicles (IAV) ;

(*c*) modernisation of the equipment of a signals battalion ensuring communications for the staff headquarters ;

(*d*) renewal of army transport vehicles in continuation of a programme already under way covering :

— 1,800 quarter-ton 4 × 4 vehicles ;

— 900 8-10-ton lorries ;

— 160 tractors and semi-trailers ;

— 100 wheeled breakdown vehicles ;

(*e*) procurement of 330 Milan systems for the ATK surface programme ;

(*f*) RITA programme : extension to other transmission equipment ;

(*g*) procurement of air-to-air and air-to-surface munitions, mainly for F-16 aircraft.

(b) France

Principal armaments programmes recently launched or likely to be launched by France in the coming years

Naval armaments

— Nuclear submarine (attack)

— Minehunter (with Belgium and the Netherlands)

— ASW and anti-aircraft corvettes

— Carrier-borne Super Etendard fighter aircraft

— New-generation Atlantic maritime patrol aircraft

— Anti-submarine helicopters

— Torpedoes

— Second-generation anti-ship missile

— Self-defence systems for ships

Land armaments

— Main combat vehicle

— Anti-tank helicopter

— Tactical transport helicopter

— Third-generation anti-tank missiles

— Individual light weapon

— Self-propelled and towed 155 mm howitzers

— Very short-range ground-air missile

— Artillery rockets

— Battlefield surveillance systems

— Artillery assistance systems

— RITA communications network

Air armaments

— Mirage 2000 fighter aircraft

— Alpha-Jet trainer aircraft

— Air-air missiles

— Laser-guided air-surface missiles and rockets

— Interception radar

— Helicopter and aircraft engines

— Tactical fighter aircraft

(c) United Kingdom

Production and development [1]

Royal Navy

311. *Ships*

(*a*) *Nuclear-powered fleet submarines.* These vessels are designed for hunter/killer operations against surface ships and submarines. HMS *Sceptre,* the tenth nuclear-powered fleet submarine and the fourth of the Swiftsure class, is planned to enter service shortly and two more of the class are under construction. The order for HMS *Trafalgar,* the first vessel of a new class of nuclear-powered fleet submarines, was placed last year and a second is planned for the coming year. These submarines will have improvements in equipment, endurance and speed which will enable them to be more effective in their primary rôle of hunting and detecting enemy submarines and surface ships in support of NATO operations.

(*b*) *Anti-submarine cruisers.* HMS *Invincible,* the first of the anti-submarine cruisers, was

1. Statement on defence estimates 1978, Cmnd 7099.

launched in May 1977 and construction work on the second, HMS *Illustrious,* continues. A third ship of this class is planned.

(*c*) *Destroyers.* Two Type 42 guided-missile destroyers are now in service and a third, HMS *Newcastle,* will shortly be accepted into service. Three more are due to enter service in the coming year. Four more ships were on order at the beginning of this year and further orders are planned.

(*d*) *Frigates.* Seven Type 21 frigates are now in service and the last of the class is expected to enter service shortly. With the launching of HMS *Battleaxe* in 1977, two Type 22 frigates are now fitting out and two more are under construction. A fifth Type 22 is planned to be ordered this year.

(*e*) *Mine countermeasures vessels.* HMS *Ledbury,* the second vessel of the Hunt class of mine countermeasures vessels, is under construction and further orders are planned for this year.

(*f*) *Patrol vessels.* Five ships of the Island class have now entered service as offshore patrol vessels. Two further ships of this class have been ordered for a variety of tasks including coastal fishery protection.

(*g*) *Fleet replenishment ships.* RFA *Fort Grange* will enter service this year and a further vessel is under construction.

(*h*) *Refits.* The modernisation of HMS *Dido,* the last of the first batch of eight ships in the Leander class frigate refit programme, is expected to be completed later this year. Modernisation of three ships in the second batch is complete, with four more in progress. Work has also begun on the refit of HMS *Andromeda,* the first ship in the third batch, which will include the fitting of the Sea Wolf point-defence missile system, Exocet anti-ship missiles, enhanced sonar equipments and electronic warfare equipment.

312. *Naval aviation*

(*a*) *Sea Harrier.* The first front-line Sea Harrier squadron is planned to form in 1980 for embarkation initially in HMS *Hermes.* The second will embark in HMS *Invincible,* and ultimately all squadrons will be deployed in ships of her class. The aircraft will be armed with Sidewinder AIM9L air-to-air and P3T air-to-surface missiles to provide it with a quick-reaction capability against enemy aircraft and an attack capability against surface vessels.

(*b*) *Naval helicopters.* Sea King Mark 1 helicopters are being modified to the standards of Mark 2 helicopters, currently in production. Sea Kings will also be fitted with an improved radar and communications system and an acoustic processor and sonobuoys to supplement the existing dunking sonar. The other helicopter under production for the Royal Navy is the Lynx Mark 2, which will be operated from most destroyers and frigates.

Naval weapons

313. *Air-defence weapons*

(*a*) *Sea Dart.* This medium-range surface-to-air guided weapon system is now fitted in three ships, and is expected to be accepted into operational service this year. A programme is under way for an improved Sea Dart system and supporting radars to increase its air-defence capabilities to meet the expected threat in the mid to late 1980s.

(*b*)*Sea Wolf.* The intensive series of sea trials on board HMS *Penelope* proved highly successful and production of both missile and ship system has begun. The weapon system is in advance of all others of its type and will provide the Type 22 frigate and other ships with a close-range self-defence capability against missiles and aircraft. A programme of improvements is in hand to maintain the capability of Sea Wolf in the face of expected developments in the threat.

314. *Anti-surface ship weapons*

(*a*) *Sub-Harpoon.* Negotiations were completed with the United States Government last October for the full development of Sub-Harpoon, a submarine-launched, air flight long-range anti-ship missile which will provide the main anti-surface ship armament of our submarine fleet from the early 1980s.

(*b*) *Sea Skua.* This anti-ship missile is expected to enter service in the early 1980s. Carried by the Lynx helicopter, it is intended to provide destroyers and frigates with an attack capability stretching far beyond their horizon.

(*c*) *NATO anti-surface ship missile.* Joint feasibility studies are now in hand with a number of NATO allies for the next generation of anti-ship missiles for service in the late 1980s and 1990s.

315. *Anti-submarine weapons*

(*a*) *Heavyweight torpedoes.* Feasibility studies for a successor to the submarine-launched Tigerfish torpedo have begun.

(*b*) *Lightweight torpedoes.* Development is continuing on Sting Ray, the advanced lightweight torpedo. It is designed to succeed the American Mk 46 torpedo and will be capable of being launched from surface ships, helicopters and RAF Nimrod aircraft.

316. *Other naval equipment*

(*a*) *Propulsion units.* A new marine propulsion unit based on the latest version of the Rolls-

Royce Spey aero-engine has entered full development.

(*b*) *Sonars.* Several types of new sonar equipment are being developed and fitted to provide surface ships, submarines and helicopters with improved anti-submarine detection and classification capabilities.

(*c*) *Electronic warfare and communications equipment.* Advanced new electronic warfare and communications equipment are included in national and collaborative development and production programmes. A NATO collaborative development programme is in hand for a decoy system for use against anti-surface ship missiles.

(*d*) *Navigation equipment.* Production orders have been placed for an improved inertial navigational system which will be fitted in submarines and the new anti-submarine cruiser.

(*e*) *Ship radars.* An advanced air surveillance and target indication radar is being developed and will be in service with the surface fleet by the mid-1980s.

(*f*) *Airborne radars.* The Seaspray airborne search radar is now in full production. This is being fitted in the Lynx helicopter and will provide target information for Sea Skua missiles. Blue Fox, a derivative of Seaspray, is under development and will be fitted in the Sea Harrier for air-to-air and air-to-surface rôles.

(*g*) *Action information systems.* The large majority of the surface fleet will be fitted with computer-based action information systems together with digital data links by the mid-1980s.

Army

317. *Armoured forces*

(*a*) *Chieftain.* Work on the planned improvements to maintain and enhance the effectiveness of Chieftain into the 1980s is going ahead. In addition to latest marks of the tank laser sight, units will also this year begin to receive the muzzle reference system. A number of modifications to improve the reliability of the main engine are being incorporated into the fleet.

(*b*) *Chieftain replacement (MBT 80).* The Anglo-German collaborative studies on a future main battle tank were terminated in March last year. Although there was a large measure of agreement on the details of the requirement, both countries felt that collaborative development and production would not be possible, mainly because the time-scales in which each country required the replacement tank became incompatible during the course of the joint work. National studies on the best way of meeting our requirement for a tank to be in service by the late 1980s are now in progress, and these will make use of the valuable work carried out during the joint concept studies.

(*c*) *Mechanised infantry combat vehicle.* The second phase of project definition for a mechanised infantry combat vehicle, to replace part of the present FV430 series of armoured personnel carriers in the 1980s, began in August last year. Project definition has also begun on a series of variants.

(*d*) *Tracked combat reconnaissance vehicles.* Two more variants in the series are now entering service — Striker, which carries the Swingfire anti-tank guided weapon system, and the command vehicle, Sultan. The last variants in the series, Samaritan, an armoured ambulance, and Samson, a recovery vehicle, are planned to enter the production phase this year.

(*e*) *Combat engineer tractor.* The new combat engineer tractor will enter service this year.

318. *Artillery and associated equipment*

(*a*) *FH 70 and SP 70.* The towed 155 mm field howitzer, FH 70, will begin to enter service early next year. The three collaborating countries, the United Kingdom, the Federal Republic of Germany and Italy, are also continuing development work on the self-propelled version, SP 70. Prototypes have been produced and are now undergoing technical evaluation trials.

(*b*) *Supervisor.* Development of Supervisor, a battlefield surveillance and target acquisition system using real-time data transmission, is continuing. Supervisor is based on an unmanned miniature helicopter, the prototype of which will make its first flight in the spring of this year.

(*c*) *Cervantes.* Development of a trailer-mounted radar, to locate rocket launchers and mortars, is continuing.

319. *Army guided weapons.*

(*a*) *Rapier air-defence missile system.* Deployment of the all-weather blindfire tracking radar, DN 181, will begin early this year. Studies are now being carried out on further improvements to Rapier and to evaluate the cost-effectiveness of a tracked version.

(*b*) *Helicopter-borne anti-tank guided weapon.* Following the evaluation of the Franco-German HOT and the American TOW systems, the Ministry of Defence announced in August last year that TOW is to be adopted and will enter service with the army Lynx helicopter in the early 1980s. A substantial part of the equipment will be manufactured under licence in the United Kingdom.

(*c*) *Swingfire long-range anti-tank guided weapon.* Development is continuing of a thermal-imaging night sight for Swingfire. Discussions

have also begun with France and the Federal Republic of Germany on the requirement for a third-generation long-range anti-tank guided weapon.

(*d*) *Milan medium-range anti-tank guided weapon.* It has been possible to accelerate delivery of the initial batch of Milan equipments being bought from the Franco-German consortium, Euromissile. Deliveries of this batch began last year and will be spread over two years. Development of a thermal-imaging night sight for Milan has begun on a collaborative tripartite basis between the United Kingdom, the Federal Republic of Germany and France.

320. *Other army equipment*

(*a*) *Light anti-armour weapon.* Project definition began last year on a man-portable anti-armour weapon to replace the 84 mm Carl Gustav recoilless rifle and 66 mm M72 rocket. Discussions are taking place within the EPG on the possibilities of collaboration.

(*b*) *Small arms.* NATO technical trials to select a standard calibre for future small arms began last year, and military tests will begin later this year. The new British 4.85 mm weapon system, comprising an automatic rifle and light support weapon, has been entered in the trials and the results should be available by the end of next year.

(*c*) *Mines.* The Barmine anti-tank mine is now in service and work began last year to develop additional fuses to extend its operational application and improve its resistance to countermeasures. The complementary off-route mine and the Ranger scatterable anti-personnel mine system will enter service later this year.

(*d*) *Electronic warfare.* In July last year, an electronic-warfare regiment took its place in the order of battle of 1 (BR) Corps. Most of its equipment will be British, although some is being bought from France. Further improvements in our electronic-warfare capability are under consideration.

(*e*) *Lynx helicopter.* Intensive flying trials of the army version of Lynx have been completed, and the helicopter is expected to enter service in the middle of this year, replacing the Scout.

(*f*) *Vehicles.* The introduction of a range of low-mobility vehicles — a basic cargo carrier, with tipper, fuel tanker and recovery variants — is proceeding according to plan. A main contractor has been chosen by competitive tender for the production of an 8-tonne medium-mobility load carrier which, together with its variants, will form the backbone of the Army's future logistic fleet.

(*g*) *Communications.* The Ptarmigan tactical trunk communications system, which will replace the present Bruin system, has now entered the final stages of development. Ptarmigan has been designed to conform with standards agreed in the communications sub-group of the Eurogroup, to enable future trunk systems to be fully interoperable.

(*h*) *Automatic data processing (ADP) system.* Trials will be carried out in BAOR of a new command and control ADP system, Wavell. If these trials are successful it is planned eventually to equip all formation headquarters in 1 (BR) Corps with Wavell to assist them in data-handling.

(*i*) *Logistic landing craft.* Two newly-built logistic landing craft have been launched. HMAV *Ardennes* was commissioned in December last year and HMAV *Arakan* will be commissioned in August this year. These vessels will provide peacetime logistic support to the Hebrides and logistic support for the reinforcement of Europe in war.

Royal Air Force

321. *New aircraft*

(*a*) *Tornado GR1.* First deliveries of production aircraft, of which 150 have so far been ordered, are expected next year. The variable geometry configuration will confer great operational flexibility and permit a combination of high-speed low-level flight, good range and an excellent take-off and landing performance. The tri-national flight test programme had amassed some 1,500 hours by the end of 1977, and test data indicate that service requirements will be met.

(*b*) *Tornado F2.* The Tornado F2 air-defence variant is now in full development with the first of three development aircraft under construction. It will have an excellent loiter capability and its armament will include Sky Flash medium-range and AIM9L short-range air-to-air missiles, and cannon. The first phase of the airborne trials of an important new air-intercept radar for the Tornado F2 has been completed and the second phase, to demonstrate full mission capability, will begin shortly.

(*c*) *Nimrod AEW.* Full development is under way to convert eleven Nimrod aircraft to the AEW rôle. They will enter service progressively in the early 1980s, replacing the Shackleton. Mission system avionics will be developed and integrated into a modified Nimrod airframe. The main features of the system will be a new radar, electronic support measures, "identification friend or foe" interrogators, an integrated data-handling system and associated communications equipment. The aircraft is planned to be interoperable to the maximum extent possible with other NATO airborne early warning systems.

(*d*) *The Harrier/Jaguar successor.* Studies of various designs for an aircraft to replace the Harrier and Jaguar are continuing with the aim of combining a capability for battlefield attack and for air combat in one airframe. The possibility of developing such an aircraft collaboratively is being explored with a number of potential partners in the EPG.

(*e*) *Support helicopters.* It is intended to meet the army's requirement for medium-lift helicopter support by the purchase of 30 Boeing-Vertol CH-147 Chinook helicopters from the United States. The helicopters would be equipped with British equipment, where appropriate, to ensure commonality with equipment already in service with the Royal Air Force. At the same time a number of Wessex helicopters would be withdrawn from the front-line and transferred to other rôles, or placed in reserve.

(*f*) *Sea King search and rescue helicopters.* The first of the Sea King search and rescue helicopters have been delivered to the Royal Air Force. They will enter service during the year and the Whirlwinds they replace will be withdrawn.

322. *Aircraft in service*

(*a*) *Nimrod maritime reconnaissance (MR) aircraft.* The major refit of Nimrod long-range maritime patrol aircraft is now in hand and flight trials of the acoustic processor start this year. The first refitted Nimrod MR2s with the processor, the associated active attack and long-range passive sonobuoys, and the Searchwater radar are due to enter service next year. The refit is to be completed by the mid-1980s.

(*b*) *Harrier.* An order for a further 24 aircraft has been placed and deliveries should start next year. The feasibility of fitting a new improved wing to the aircraft is also under study.

(*c*) *Jaguar.* Work is in hand to increase the take-off thrust and the time between overhauls of the Adour Mk 102 engine. Reconnaissance pods containing British infra-red linescan and camera equipment are now being fitted.

(*d*) *Puma.* The fleet will be progressively updated by modifications to improve performance and extend component life, and by the introduction of fibre-composite main rotor blades and an ice and snow protection system. Delivery of an advanced tactical navigation system is planned to take place this year.

(*e*) *Phantom.* Work has begun on a programme to improve the combat capability of the Phantom to maintain a high level of operational effectiveness until it is replaced by the Tornado F2 in the mid-1980s.

323. *Aircraft weapons*

(*a*) *Air-to-air missiles.* The Sky Flash medium-range air-to-air missile, to be carried by the Phantom and the Tornado F2, is now entering full production. Requirements for future short-range air-to-air missiles for the Phantom and Tornado F2 will be met by the procurement of AIM9L missiles most of which, subject to satisfactory negotiation, will be manufactured by a European consortium of which the United Kingdom will be a member.

(*b*) *Air-to-surface weapons.* Project definition has begun of the British Aerospace P3T anti-ship sea-skimming missile, which will be fitted to the Buccaneer in the early 1980s to replace TV Martel and will later be carried by those Tornado GR1s which operate in the maritime strike/attack rôle. P3T will have a considerably longer range than Martel, will be guided by active radar to provide an all-weather day and night capability and will be able to penetrate the enemy's electronic countermeasures (ECM) defences. During the year American laser-guidance kits to improve the accuracy of RAF 1,000 lb high-explosive bombs and laser-designator pods for use on Buccaneers will be delivered. Agreement in principle has been reached with the United States for the co-operative development of an advanced airfield attack system. Other weapons projects include studies of anti-armour and defence-suppression weapons, planned to enter service in the 1980s.

324. *Ground-based air-defence equipment*

(*a*) *Rapier.* The Rapier systems now in service with the RAF Regiment are being fitted with the blindfire tracking radar, DN 181. A study of further improvements is under way (see paragraph 319(*a*)).

(*b*) *The United Kingdom air-defence ground environment (UKADGE).* The planned programme of improvements to UKADGE, which is receiving NATO funding support, is now well advanced and development work will begin this year. Work is also in hand to re-equip a number of early warning stations.

325. *Other electronics*

(*a*) *"Identification friend or foe" (IFF).* Feasibility studies are in progress in order to define a replacement IFF system with NATO-wide application.

(*b*) *Communications.* High-speed data communications are planned for the transfer of information required by future command and control systems. Project definition has begun on the exchange of digital data between fighters, AEW aircraft, ships and UKADGE, and the feasibility of introducing a general purpose ground communication system, using digital transmission and computer switching techniques, is being investigated. New very high frequency (VHF)

and ultra high frequency (UHF) airborne radio systems are being installed in most RAF aircraft to replace obsolescent equipment and to satisfy revised international compatibility standards; new VHF and UHF ground radios are also being introduced. Techniques to improve beyond-line-of-sight radio systems are being studied and the installation of a new HF radio ground/air network for Strike Command aircraft has begun. The United Kingdom is co-operating closely with its allies to ensure that, where necessary, future communications systems are interoperable.

(*c*) *Electronic warfare.* Passive radar warning equipment is being fitted in a variety of combat aircraft and active ECM equipment is planned to be fitted in the Tornado GR1 and the Jaguar GR1. ECM for the Harrier are also being studied.

326. *Other development programmes*

Work is continuing on improving engine safety, efficiency and reliability and on reducing costs. In order to build up experience on advanced technologies relevant to new aircraft and weapons, demonstrator programmes are being carried out on the use of composite materials for helicopters; on the application of active control technology to enable the pilot to get maximum capability from the aircraft and allow greater freedom to the designer; and on advanced air-to-air missiles.

APPENDIX IV

Joint production — Collaborative projects as a proportion of national defence equipment procurement

(a) Percentage of "procurement" head of defence budget spent on collaborative projects

	1974	1975	1976	1977	1978
Belgium	15.6	30.6	31.1	49.4	60.6
United Kingdom	n.a.	n.a.	n.a.	17.1	17.6

n.a. = not available.

(b) Collaborative projects to which foregoing percentages relate

(*i*) *Belgium*

CVRT	BE/UK
Gépard (AA 35 mm)	BE/FRG
RITA (already approved)	BE/FR
Alpha-Jet aircraft	BE/FR/FRG
F-16 aircraft	BE/NL/NO/DK/US
Minehunters	BE/NL/FR

(*ii*) *United Kingdom*

Sea systems

Tyne/Olympus logistic support	BE/NL/UK
Olympus gas turbine support	FR/UK
Seagnat — anti-ship missile decoy system	DK/FRG/NO/UK/US
NATO anti-surface ship missile	FR/FRG/NL/NO/UK

Land systems

CVR(T) family — tracker armoured vehicles	BE/UK
SP 70 — 155 mm self-propelled gun	FRG/IT/UK
FH 70 — 155 mm towed gun	FRG/IT/UK
Midge surveillance system	CAN/FRG/UK
Milan : night sight	FR/FRG/UK

Air systems

Tornado — multi-rôle combat aircraft	FRG/IT/UK
Jaguar — strike/attack aircraft	FR/UK
Puma — twin engine GP helicopter	FR/UK
Gazelle — GP light helicopter	FR/UK
Lynx — anti-submarine and utility helicopter	FR/UK
Martel — stand-off air-to-surface guided weapon	FR/UK
JP 233 — airfield attack weapon	UK/US
Long-range passive sonobuoy and sonic processor	AUS/UK

AUS — Australia
BE — Belgium
CAN — Canada
DK — Denmark
FR — France
FRG — Federal Republic of Germany
IT — Italy
NL — Netherlands
NO — Norway
UK — United Kingdom
US — United States of America

APPENDIX V

Procurement, research and development, and research as a percentage of defence budget

	Procurement	Research and development	Research
Belgium	18 %	n.a.	0.06 %
France	43 %	10.8 %	2.1 %
United Kingdom [1]	44.2-38.1 %	13.1-12.2 %	1.9-1.8 %

1. Range for years 1974-78.
n.a. = not available.

PRINTED IN FRANCE

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