

108868

BY THE COMPTROLLER GENERAL

# Report To The Congress

OF THE UNITED STATES



## Transatlantic Cooperation In Developing Weapon Systems For NATO-- A European Perspective

Multinational collaboration in developing weapon systems for the North Atlantic Treaty Organization is already a reality in Western Europe. Few attempted codevelopment efforts involving the United States have been successful.

The United States should prepare for the day when weapon system codevelopment programs with members of the alliance will become more prevalent. More flexibility in U.S. policies and procurement practices may be needed for such joint ventures to succeed.



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COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

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To the President of the Senate and the  
Speaker of the House of Representatives

This report discusses the principal impediments to transatlantic codevelopment of weapon systems for the North Atlantic Treaty Organization (NATO). It is based on the views of numerous government and industry representatives of the major industrialized countries of Western Europe.

Transatlantic codevelopment is a desirable goal from the standpoint of its potential for allowing governments to share the high cost of producing weapon systems and for increasing standardization in NATO.

We are sending copies of this report to the President; to the Director, Office of Management and Budget; and to the Secretaries of State and Defense.

A handwritten signature in cursive script, reading "Homer A. Steeds".

Comptroller General  
of the United States



D I G E S T

Interoperability and standardization in the North Atlantic Treaty Organization (NATO) are receiving strong emphasis in defense circles throughout the alliance. Both are seen as ways to improve performance on the battlefield and to promote better management of defense budgets.

Interoperability requires two or more weapon systems, used for the same military purposes, to be sufficiently similar to enable them to operate with common supplies such as fuel or ammunition. Standardization envisions even greater commonality--in some cases, the fielding of identical systems./

Interoperability is regarded as the more readily achievable and has, therefore, become the short-term goal.

Standardization and interoperability objectives can be achieved

--through a program of weapon system sales by the NATO countries to each other or

--through development programs undertaken by two or more countries, commonly called codevelopment.

The first method only partially satisfies the economic aspirations of the governments concerned; it involves direct sales by a developer or the developer's licensing a foreign contractor to produce its product. It could also slow or stifle technological progress in the countries not participating in the development.

In codevelopment all participants can derive economic and technological benefits from sharing the cost of development and the ensuing production.

PSAD-79-26

→The formation of consortia to develop weapon systems entirely within the European community has been gathering momentum because of Europe's desire for technological advancement (which purchases from the United States do not provide). If this trend continues--with the United States and Europe developing different weapons to meet common needs--the result could be a serious setback for standardization. In the long run, it also could foreshadow the loss by American defense contractors of some part of the weapons system market in Western Europe and elsewhere.

However, continued American participation in developing weapons for the European market still is desired by the European community. Europe would like to take advantage of American know-how, which is still ahead of the field in several types of weapons. Because multinational weapon system codevelopment by Europeans has been extensive, GAO interviewed government and defense industry officials in Europe to

--find out more about their experiences in codeveloping weapon systems and

--obtain their views on the prospects and problems of extending this form of cooperation across the Atlantic.

Experiences over the past years have demonstrated that European members of the alliance cooperatively can build sophisticated weapon systems in many high technology areas. Although European codevelopment has been mostly in the field of aircraft and missiles, it is moving to other weapon fields. (See pp. 6 and 7.)

Europe has experienced some problems in its move towards multinational codevelopment of weapon systems. These have involved such things as deciding how to distribute the work among the participating countries, compensating for continuous currency fluctuations, and living with delayed management decisions. Resolving them has usually been on a case-by-case basis. (See pp. 15 to 23.)

Perhaps one of the most difficult stumbling blocks has been in getting a project started properly. Some key elements to successful project initiation, as identified by governments and industries in Europe, are obtaining strong Government backing for the project, developing well-defined requirements, and negotiating complete and precise memorandums of understanding before beginning a program. (See pp. 9 to 14.)

From the European perspective, the problems they have encountered will be more difficult to overcome on a transatlantic scale--mainly because the motivations and factors that have facilitated intra-European cooperation exist to a lesser degree when viewed in a transatlantic environment. The strong motivation in Western Europe to maintain a viable defense industry and further its technological advancement has made it easier for the respective governments to accommodate their differences. Europeans see the United States with its stronger resources and technology base as less motivated economically to codevelop weapon systems. They feel this would make it difficult to reach equitable accommodations. (See pp. 26 to 35.)

The principal impediments Europeans see are

- concern that the United States, because of its size, will tend to dominate in a joint venture relegating Europe to a junior partner status;
- U.S. arms export policies which may restrict third country sales;
- Government restrictions on technology transfer which impede or block the free flow of U.S. technology to Europe; and
- doubt as to whether the United States would be willing to compromise on some of its weapon systems acquisition practices. (See pp. 33 to 35.)

The solution to the first problem would depend on the participants successfully devising

contractual and other arrangements acceptable to all. The remaining three may require changes in current U.S. policy and procurement practices. For the present, the United States has been negotiating differences with the other program participants on a case-by-case basis and has granted waivers to existing practices and procedures where appropriate. However, the United States should prepare for the day when weapon systems codevelopment programs with members of the alliance will become more prevalent. Indeed, several initiatives along these lines have already begun. A rethinking of arms sales and technology transfer policies is in order. Procurement regulations and practices conceived for the domestic environment should also be reviewed from the standpoint of their applicability to transatlantic codevelopment undertakings. By the same token, it is to be expected that the European participants will have to make similar accommodations in order for the collaborative programs to succeed.

Any changes to U.S. laws, regulations, and policies should not be made, however, without studying the effect they could have on national objectives related to national security, the balance of payments, the industrial base, and the transfer of technology.

#### RECOMMENDATION

GAO recommends that <sup>should</sup> the President establish a group drawn from Government agencies and private industry to identify and propose any needed changes in policies and procurement practices which could facilitate transatlantic codevelopment.

GAO believes that a group such as that proposed is needed to bring to bear a broader perspective of how changes to existing policies might affect national interests. The Departments of Defense and State both have, in GAO's view, parochial perspectives. Defense, on the one hand, is concerned about maximizing military effectiveness of the NATO alliance, while State is naturally concerned about U.S. relationships with those countries.



Whatever the group concludes as to the level of codevelopment to be achieved, it will be necessary for it to address the following issues which impede these activities.

--U.S. laws and procurement regulations which impede cooperative development programs.

--U.S. arms export policies which restrict opportunities for greater U.S. involvement in codevelopment programs.

--Policies which restrict technology transfer and the reasons for this restriction.

#### AGENCY COMMENTS

The Departments of State and Defense both agree that the impediments to transatlantic codevelopment have been correctly identified in the report. They believe, however, that changes in policies and procurement practices need not await a further study. They believe there is sufficient experience and information available to justify making the changes now. GAO thinks the changes that may be required are too far reaching to be made without further assessing the implications they hold for major foreign and domestic programs and goals. (See pp. 39 and 40.)



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ABBREVIATIONS

GAO General Accounting Office  
IEPG Independent European Program Group  
MRCA Multi-role Combat Aircraft  
NATO North Atlantic Treaty Organization

## CHAPTER 1

### INTRODUCTION

Standardization of North Atlantic Treaty Organization (NATO) weapon systems remains an issue for discussion on each side of the Atlantic, in both national and international circles. In a previous report to the Congress, 1/ we discussed the benefits, prospects, and problems of standardizing NATO weapon systems. We concluded that although there is general agreement within NATO on the need for standardized weapons, substantial progress toward this objective would be slow, incremental, complex, and heavily dependent on the willingness of individual NATO nations to compromise on military, economic, and political issues.

In that report, we suggested that perhaps codevelopment of weapon systems among alliance partners could be an approach to resolving many of the national issues impeding standardization. Under such arrangements, nations share resources and technology in developing a weapon system and then share in producing the system. The result would hopefully be a common system for each of the participants, developed, produced, and fielded at a lesser cost to the individual nations.

There have been various recent initiatives on both sides of the Atlantic aimed at bringing the allies closer together in meeting NATO's armament needs. While standardization and interoperability have been the focus of these initiatives, weapon system collaboration and cooperation among the alliance partners is recognized as the key to attaining these goals.

On the U.S. side, the Congress in 1976 enacted legislation requiring that equipment procured for U.S. Forces in Europe be standardized or at least interoperable with equipment of the NATO Allies (Public Law 94-361). In the same legislation, the Congress endorsed a "two-way street" approach to transatlantic weapons cooperation and encouraged European armaments collaboration to support this initiative.

At the May 1977 NATO Summit Meeting, President Carter also endorsed the need for more cooperation in developing, producing, and procuring NATO defense equipment. The President stated that the Alliance members should begin exploring ways to improve transatlantic development, production, and

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1/"Standardization in NATO: Improving the Effectiveness and Economy of Mutual Defense Efforts," Jan. 19, 1978.

procurement cooperation and pledged U.S. support to achieve this objective.

On the European side, there is increased emphasis on coordinating European defense needs and establishing a transatlantic dialogue with the United States. Europe, through the Independent European Program Group (IEPG), is attempting to coordinate its defense equipment efforts in order to improve its capability to produce cost-effective equipment. Europe expects a meaningful dialogue for selecting future NATO weapon systems to occur which could result in a new level of transatlantic weapon system cooperation.

NATO has also increased its efforts to promote weapon system collaboration. Several task forces and study groups have reviewed NATO's long-term defense needs and the possibilities offered by licensed production and coproduction for increasing standardization.

#### U.S. EXPERIENCES IN MULTINATIONAL COOPERATION

The United States has had little experience in multinational development of weapon systems--the canceled Main Battle Tank-70 project with West Germany probably being the most notable. Neither have there been many coproduction ventures in the sense that the United States and another country each share in manufacturing the parts needed for the end product. Instead, U.S. cooperative weapon system ventures have been primarily in the form of licensed production arrangements, that is, a European firm is licensed to produce a U.S. weapon system in Europe. Examples are the F-104 fighter aircraft, the Hawk missile system, and the M-113 armored personnel carrier. Recently, two American contractors were jointly licensed to produce the French-German Roland missile system in the United States and there have been some initiatives in the form of bilateral memorandums of understanding with European countries which are gradually increasing instances of transatlantic cooperation.

Coproduction of the F-16 fighter aircraft is a departure from past U.S. experiences. The F-16 is being jointly produced with four NATO allies; that is, each country will share in producing selected parts for the aircraft. This arrangement is being watched closely as a test case for future U.S./European ventures.

## EUROPEAN EXPERIENCES

Compared to limited U.S. involvement, European nations have had considerable experience in codeveloping sophisticated weapon systems, especially in the aircraft and missile fields.

After World War II, the United States was the free world leader in developing and producing major weapon systems. During the post-war years, the NATO partners, to a great extent, adopted U.S. developed military hardware for their forces--the result being a large degree of weapon standardization in NATO. But, in recent years, the European NATO partners have moved away from U.S. systems, electing to develop and produce their own armaments. Multinational codevelopment of weapon systems has been a much used approach in making this trend possible. Some of the more notable projects are (1) the Jaguar fighter aircraft developed by the United Kingdom and France, (2) the FH-70 field Howitzer and the Tornado multirole combat aircraft developed by the United Kingdom, West Germany, and Italy, and (3) the Hot, Milan, and Roland missile systems developed by West Germany and France. In addition to multinational efforts to develop military systems, there is evidence that similar trends extend into commercial developments. The Concorde and the Airbus-300 aircraft are examples of commercial European multinational developments.

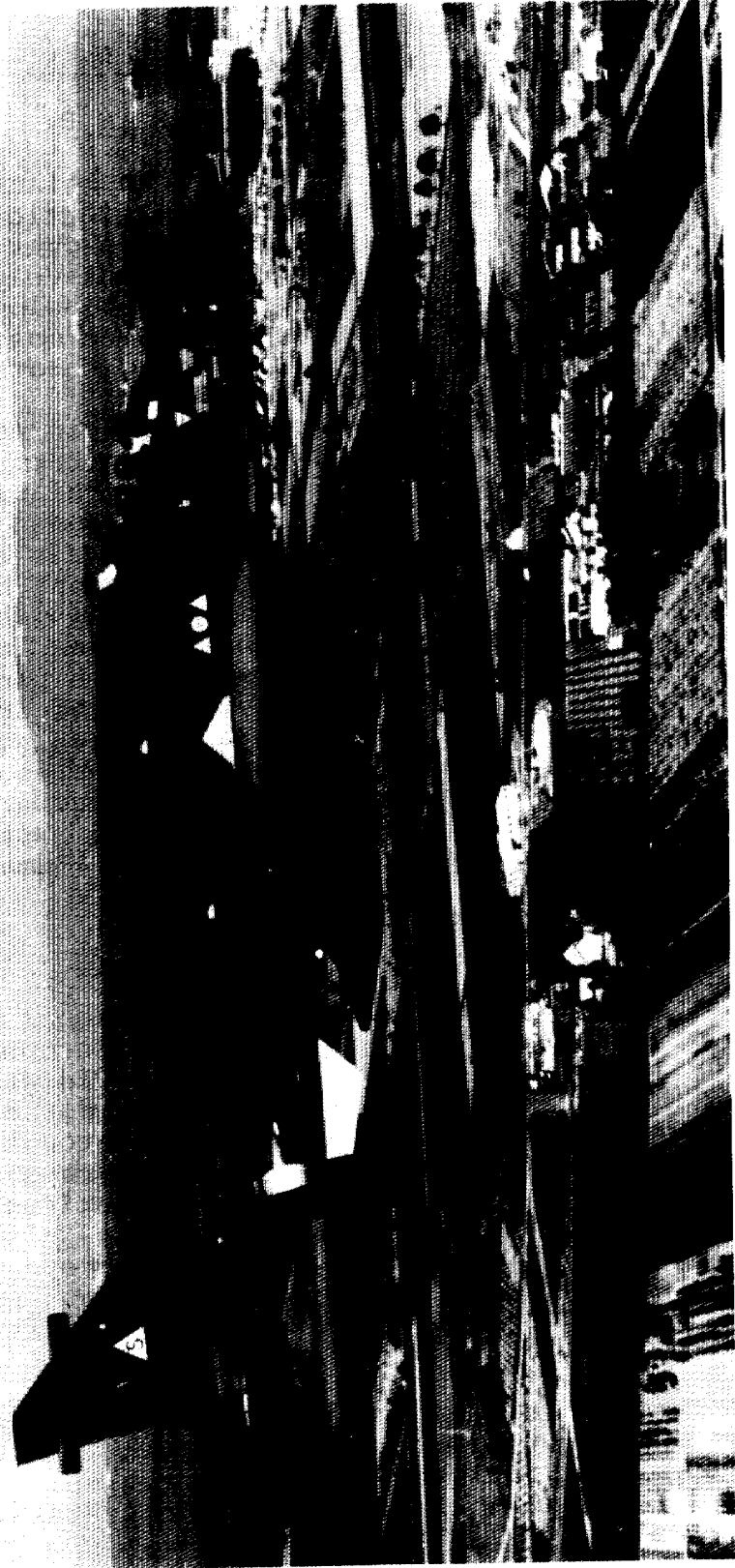
## PURPOSE AND SCOPE OF REVIEW

There have been several successful cooperative ventures in Europe. Extending such cooperation across the Atlantic to include the strongest power in NATO, the United States, would appear to make such ventures even more economically attractive for the participants and, further, would enhance standardization in NATO. We decided to look more closely at the European experiences in multinational cooperation to see what lessons had been learned from these ventures. Our objective was to assess the potential for greater industrial collaboration between the United States and Western Europe in codeveloping weapon systems for use in NATO.

Comments on multinational weapon systems cooperation were obtained from government and industry officials in France, Italy, the United Kingdom, and West Germany--these countries having the major defense industries in Europe. We interviewed 16 defense contractors. The firms visited are listed in appendix I. We selected them based on their sizes, their roles in their countries' defense industry, and their experiences in multinational cooperative projects. A listing of major European cooperative ventures is shown in appendix II.

We also discussed multinational weapon system collaboration with U.S. Embassy officials in the countries we visited and with U.S. officials at the U.S. Mission to NATO as well as several U.S. contractors who have participated in some transatlantic ventures in the defense or commercial fields.





COURTESY: AVIONS MARCEL DASSAULT-BREGUET AVIATION

## JAGUAR TACTICAL SUPPORT AND TRAINING AIRCRAFT

JOINT VENTURE BETWEEN FRANCE  
AND THE UNITED KINGDOM

## CHAPTER 2

### MULTINATIONAL CODEVELOPMENT--

#### THE EUROPEAN EXPERIENCE

Regardless of the outcome of transatlantic cooperation Europeans seem to be committed to multinational codevelopment for the future. Their experiences over the past years have demonstrated that they can cooperatively build sophisticated weapon systems in many high technology areas. Although European codevelopment has been mostly in the field of aircraft and missiles, it is moving to other weapon fields.

Europeans have faced many problems in moving toward multinational codevelopment. Resolving them has usually been on a case-by-case basis. The more significant and troublesome considerations in intra-European ventures have involved national prerogatives which almost always require resolution through government-to-government negotiations. Perhaps one of the most difficult stumbling blocks has been in initiating a project. It usually takes long-term planning and considerable negotiating for the participants to reach agreement on the weapon system's requirements they can all accept. And, even when there has been agreement to proceed, Europeans have faced other troublesome areas, such as work and cost sharing, management structures, technology transfer, and export sales. No hard and fast rules, however, on how best to handle these problems have emerged.

#### THE EVOLUTION OF EUROPEAN MULTINATIONAL COOPERATION

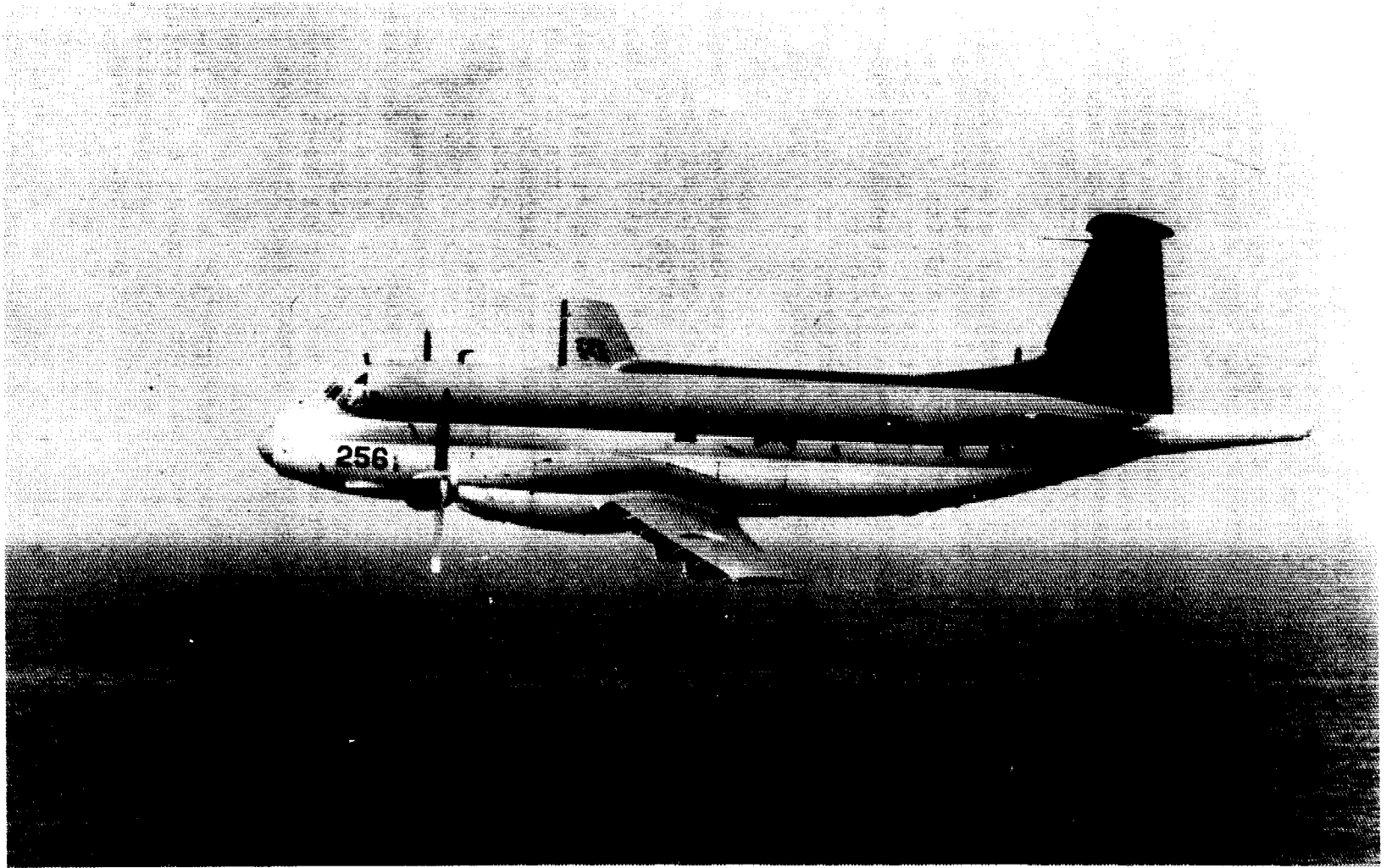
The European trend toward multinational codevelopment of weapons is a logical progression of Europe's efforts to rebuild its defense industries after World War II. During the initial years after the War, a considerable amount of European armament needs were provided through various U.S. foreign aid and military assistance programs. In the late 1950s, the United States launched initiatives to help Europe redevelop its defense industries. These initiatives led to an increased flow of technology to Europe, a trend toward licensed production of U.S. designed weapon systems, and a shift from armaments provided through military assistance programs to direct sales of weapon systems.

Because of rising costs and the limited number of weapons needed by each nation, Europeans, in recent years, have turned to multinational collaboration as a means of developing and producing major weapon systems. One of the

first systems to be developed was the Atlantic Maritime Patrol Aircraft. The Atlantic was a joint venture among several European nations which began in 1957. Since that time, other major systems were fielded by the Europeans following multinational codevelopment. For example:

- The United Kingdom and France initiated the Jaguar project in May 1965 to meet a common requirement of the British and French air forces. Now operational, the Jaguar serves a dual role as an advanced and operational trainer and as a tactical support aircraft.
- The FH-70 and SP-70 Howitzer projects are two artillery weapons being jointly developed and produced by the United Kingdom, West Germany, and Italy. The FH-70, a field Howitzer, was originally an Anglo-German project, but it became a trinational effort when Italy joined as an equal partner in 1970. The SP-70, a self-propelled Howitzer, is the second of the trinational cooperative projects to be produced in the late 1970s.
- Milan, Hot, and Roland missiles, products of a French/West German company (Euromissile), resulted from an agreement initiated in the early 1970s to codevelop and coproduce a series of advanced missile systems.
- The Tornado, a multirole aircraft, is a trinational venture between Italy, West Germany, and the United Kingdom. Panavia, the international European company, was formed in 1969 to develop and produce the Tornado for service in the late 1970s.
- In 1970 the French and West German governments initiated the Alpha Jet project to meet a joint requirement for a subsonic basic and advanced training aircraft. The system was jointly developed by Dassault-Breguet of France and Dornier of West Germany. Approval to proceed with the production phase was announced in 1975.

In addition to multinational efforts to develop military systems, similar trends extend into European commercial development. The Concorde and the Airbus-300 are examples of commercial European multinational developments. Other cooperatively developed weapon systems are listed in appendix II. While not all cooperative projects have been successful and some have been costly, European initiatives, no doubt, have spurred the European defense industry into the position it is in today--that of being able to produce



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COURTESY: AVIONS MARCEL DASSAULT-BREGUET AVIATION

ATLANTIC MARITIME PATROL AIRCRAFT

COOPERATIVE VENTURE HEADED BY FRANCE WITH PARTICIPATION FROM BELGIUM, WEST GERMANY, ITALY, THE NETHERLANDS, AND THE UNITED KINGDOM

acceptable weapon systems in several high technology areas although not yet having developed a full range of capabilities in all fields.

### INITIATING PROJECTS

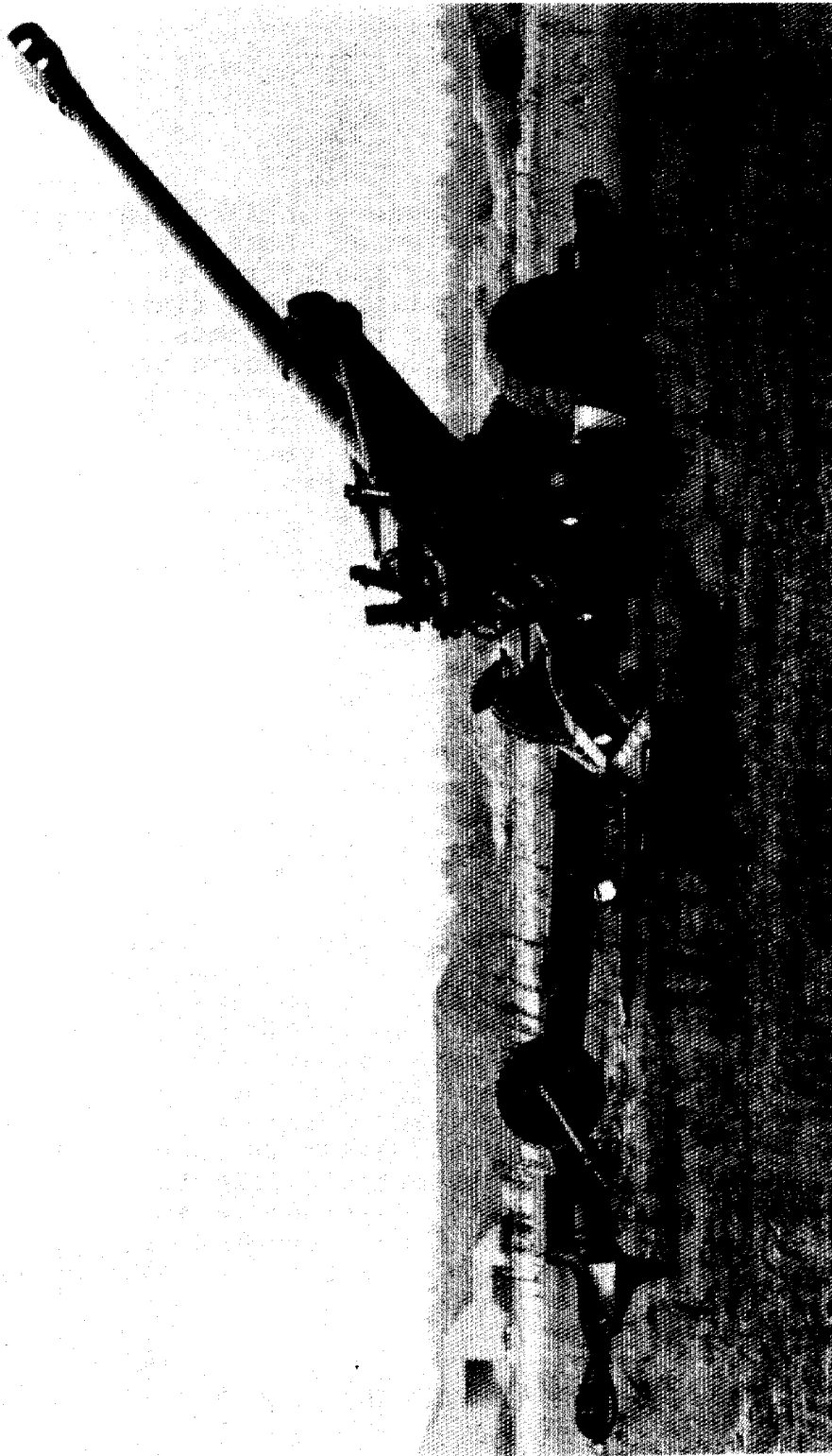
One of the most difficult phases in European collaboration has been in initiating projects. Some key elements to successful project initiation, as identified by government and industries in Europe, are political and financial commitment to the project, well-defined requirements which are mutually acceptable, and complete and precise memorandums of understanding. Responsibility for these elements rests primarily with governments. Whether industry takes a substantial role or not depends upon the prerogatives of each participating government. In either case, an overriding view was that government and industry must work together throughout the project to resolve the many problems encountered.

#### Political and financial commitments

Long-term political and financial commitments are key considerations in initiating a multinational project. European spokesmen said that before undertaking cooperative projects, participating governments should be certain they want the system and are willing to supply the appropriate political and financial support needed to complete the program. The frequently cited view was that once governments have committed themselves to a project, it is extremely difficult to back out. There are usually stiff penalty clauses in agreements to discourage a partner from canceling its participation. According to industry spokesmen, such clauses have been very effective in holding participation. For example, in a recent airline development, the partner countries at different times wanted to terminate their participation. However, the penalty clauses and political pressures were such that it was more advantageous to continue the program. Several spokesmen believed the difficulty in pulling out of a project was a definite advantage to multinational cooperation, and, according to one government group, it deterred political intervention once a project was started.

#### Defining system requirements

Several industry spokesmen emphasized the importance of having a well-defined project from the start. In a published article, one industrial official said that a recent missile project lost 1 to 2 years in development time because one country wanted a missile fired from shoulder height while



COURTESY: RHEINMETALL GMBH

**FH-70 155MM FIELD HOWITZER**

JOINT VENTURE OF WEST GERMANY,  
THE UNITED KINGDOM, AND ITALY

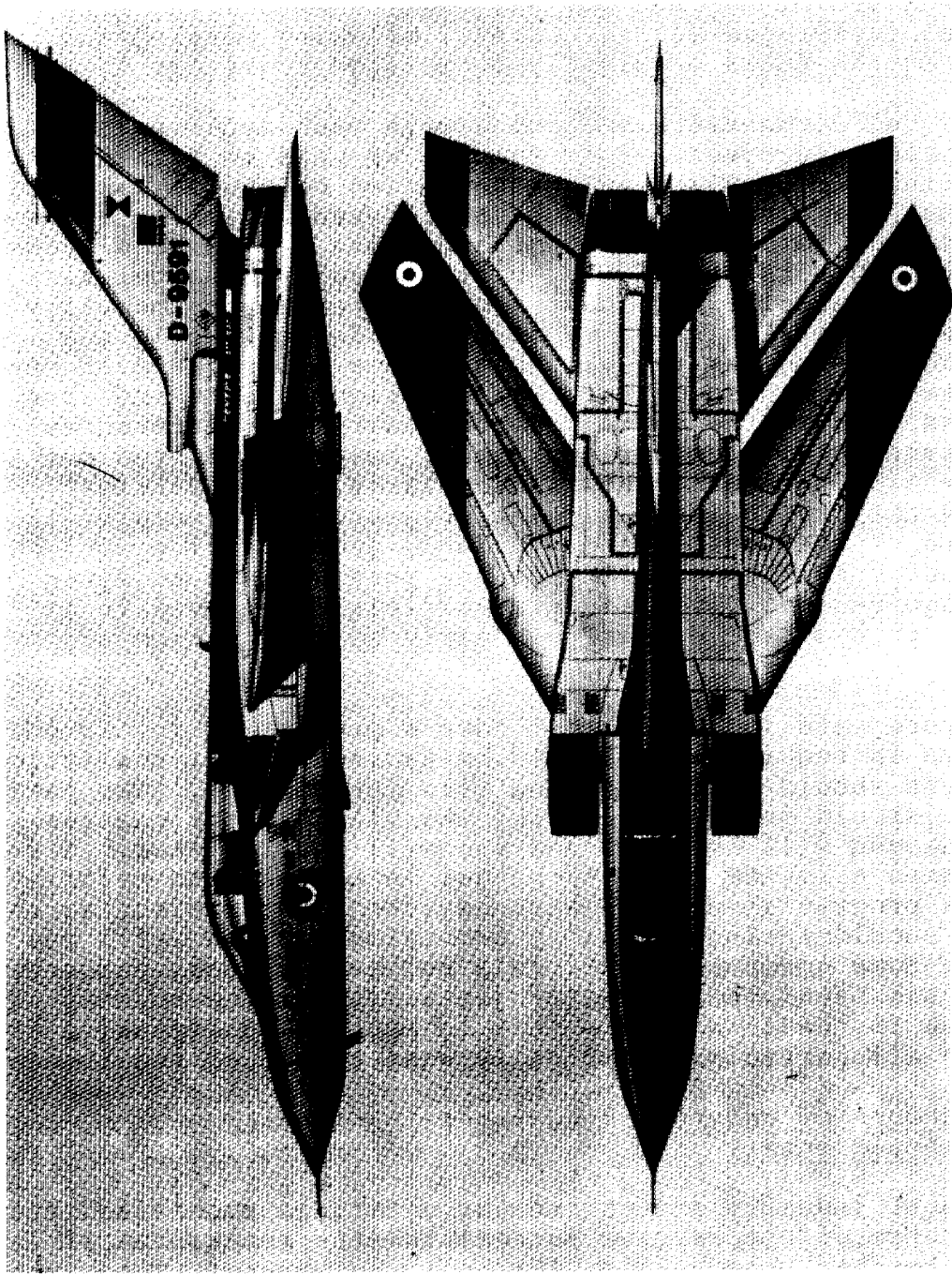
the other wanted a ground-fired missile. A similar situation was avoided on the Tornado aircraft. One to 2 years was spent on definition so that the requirements were well-defined in the project agreements, allowing development to start on the basis of clearly formulated requirements.

Total commonality has not always been necessary in initiating a project. For example, we were told the French and British recognized at the beginning of the Jaguar project that the aircraft would have different avionics and would be designed to carry different armaments. Also, the French and British versions of the jointly developed Martel air-to-surface missile only have about 50-percent commonality. The French version has a radar homing device, while the British version has television guidance. Officials of one defense ministry said that detailed requirements are acceptable as long as the costs to accommodate the differences are reasonable. Another spokesman, however, pointed out that if the gap in requirements is too large, the countries should not try to force a joint project. For example, the failure of the Anglo-French variable geometry aircraft was attributed to the inability of the participants to agree on the requirements. The ministry officials believed it is better to know the differences early so they can be accommodated.

Europeans indicated that once a project is initiated, changes in requirements should be avoided. But, realistically, partners should anticipate and plan for changes. The participants should decide in advance who will approve changes, how changes will be made, and who will pay for them. Several spokesmen said the cost of changes is not easy to negotiate once a program is started and suggested that project agreements should include specific provisions for who will pay for them. Some government officials believed a good approach, which has been used on two projects, is for the country wanting to change a requirement to pay the additional cost unless all participants mutually want the added requirement.

Memorandums of understanding--what they should entail

Most industry and government officials emphasized the importance of cooperative agreements--the memorandum of understanding being one of the basic documents. They emphasized that the memorandum of understanding should be sufficiently detailed to allow planners to decide whether their governments are willing to financially and politically obligate themselves to a project.



COURTESY: MESSERSCHMIDT-BÖLKOW-BLOHM

JOINT VENTURE OF WEST GERMANY,  
THE UNITED KINGDOM, AND ITALY

## TORNADO MULTIROLE COMBAT AIRCRAFT



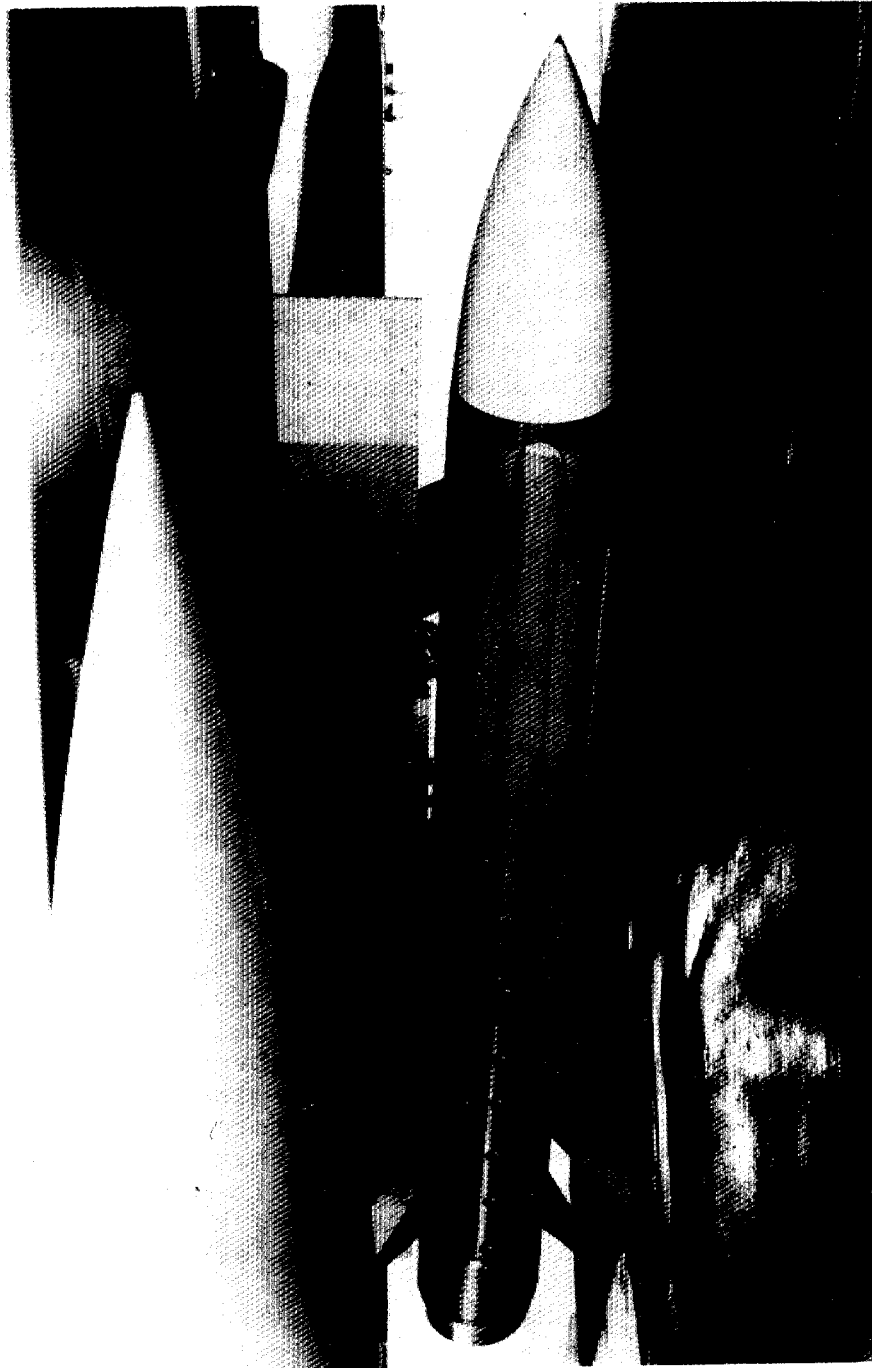
Carefully designing memorandums of understanding between participants is a government responsibility. While industry can assist governments in negotiating details, the governments must make the final decisions. Both industry and government officials felt that particularly important elements of the agreements were system requirements, work and cost sharing, and export sales. Other areas discussed were technology transfer, administrative and contracting authorities, and testing and quality control. Spokesmen from one company stated that imprecise wording or the absence of agreements may result in project delay or termination. For example, they said a memorandum of understanding agreeing to the transfer of all technology "except that determined as nationally sensitive" is too vague and would cause problems for both industry and government.

### Industry's role

In most European countries there are only one or two major contractors in each weapon field. In many cases, they are nationalized. Consequently, European governments have frequently selected their weapon system contractors in advance as opposed to U.S. practices. Competition is limited to the early stages of a program if it is used at all. Because contractors are selected well in advance, they have an opportunity to play a role in shaping multinational ventures.

The extent industry has participated in cooperative projects seems to vary from country to country. In some countries, industry has played a leading role in setting the environment for cooperation and in shaping the final form of multinational cooperative ventures. For example, industry has contributed to government decision processes by identifying programs for consideration, identifying potential partners, and organizing management structures for some projects. Industry has also assisted governments in negotiating the basic outlines of projects, including project requirements, goals, and work-sharing formulas. In some countries, governments seem to prefer that industry take a lesser role. Some government officials said that governments should initiate and mold the project with only limited industry participation until agreements are signed.

Industry seemed to have mixed feelings about when, and the extent to which, companies should get involved in projects. Some company officials said it was best for governments to initiate projects and work out the details without industry involvement. Others believed that early industry involvement was critical to a project. For example, one company official said that work shares on some projects had



COURTESY: MATRA S.A.

COOPERATIVE PROGRAM BETWEEN FRANCE  
AND THE UNITED KINGDOM

## MARTEL AIR-TO-SURFACE MISSILE

not been divided so that technical interfaces could be easily accommodated. He said industry involvement may preclude, or at least make governments aware of, such problems.

### MANAGING PROJECTS

Although spokesmen agreed that the management structure of a cooperative project must be tailored to suit the particular circumstances, many believed that it should be as simple as possible to facilitate decisionmaking and cost control. Also, the number of partners participating in a cooperative project tends to influence the cost and complexity of management. Several European officials said that cooperative projects should involve no more than three partners.

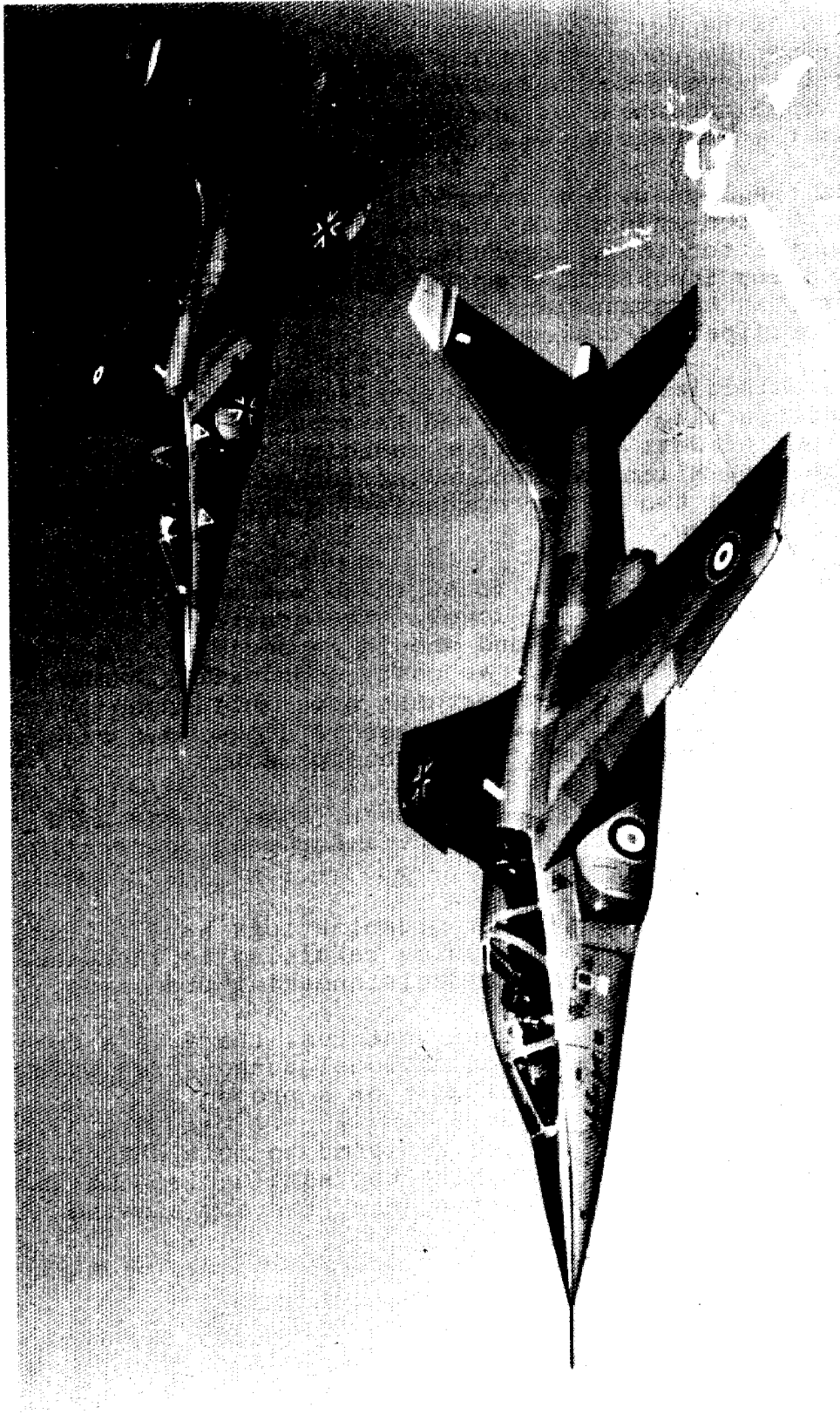
#### Management structures

In a multinational project there must be some means to coordinate responsibilities and make decisions. Also, the time and expense needed to organize management as well as to maintain national prerogatives are certainly considerations when selecting the approach to use. Various levels of responsibility must be considered--ministerial, government executive, contractor, and subcontractor. European governments and industries have found that project management can be coordinated differently at each level. Three methods reported as commonly used have been (1) a pilot approach, where one partner accepts leadership, (2) a cooperative approach, where each performs specific responsibilities with management loosely tied together by a committee or project team, and (3) an integrated approach, where one formal structure is established to lead and coordinate duties.

The following matrix is one industry official's illustration of the three management approaches and the levels of responsibility that must be considered. The FH-70 Howitzer and the Tornado projects are used to demonstrate these relationships.

MANAGEMENT LEVEL		FH-70 HOWITZER			TORNADO (MRCA)		
		PILOT APPROACH	COOPERATIVE APPROACH	INTEGRATED APPROACH	PILOT APPROACH	COOPERATIVE APPROACH	INTEGRATED APPROACH
GOVERNMENT	MINISTERIAL						
	PROJECT EXECUTIVE						
INDUSTRY	PRIME CONTRACTOR						
	SUB CONTRACTOR						

As shown above, the FH-70 Howitzer project is primarily managed under the cooperative approach. The committees have joint coordinating responsibility at the government level. At the industrial level, Vickers Ltd. of the United Kingdom coordinates design responsibilities and shares production responsibility with Rheinmetall of West Germany and OTO Melara of Italy. The Tornado, on the other hand, is an example of an integrated management structure. The West German, British, and Italian Governments have set up two governmental organizations to manage the project. The NATO Multi-role Combat Aircraft (MRCA) management organization is set up as a supra-national policymaking authority, and the NATO MRCA management agency has been established at the executive level for project oversight. On the industrial side, the participants--Messerschmitt-Boelkow-Blohm, British Aerospace, and Aeritalia--have formed a multinational company called Panavia to manage and coordinate the project contractors. Also, Turbo Union was formed as a multinational prime contractor for the engine manufacturers--Motoren-und Turbinen-Union, Fiat, and Rolls-Royce. Other examples of how Europeans have organized management structures on other European projects are as follows.



COOPERATIVE VENTURE BETWEEN  
FRANCE AND WEST GERMANY

COURTESY: AVIONS MARCEL DASSAULT-BREGUET AVIATION

### ALPHA JET CLOSE AIR SUPPORT AND TRAINING AIRCRAFT

- The Alpha Jet is an example of a project managed primarily under the pilot approach. At the industrial level, Dassault-Breguet group of France is the main contractor and Dornier of West Germany is the industrial collaborator.
  
- On the Jaguar, the governments of Britain and France appointed an official Jaguar Management Committee to look after their interest. SEPECAT is the complementary industrial company to manage and coordinate British Aerospace and Dassault-Breguet, the participating contractors.
  
- Euromissile is a multinational company formed by Aerospatiale of France and Messerschmitt-Boelkow-Blohm of West Germany for managing and marketing the Hot, Milan, and Roland series of missiles, which the two parent companies jointly developed and produce.

In our discussions, we found there was no preferred management structure at any level. The general view was that each method has its merits and should be decided on a case-by-case basis. Factors such as cost, complexity, number of partners, and confidence in partners have influenced the approach selected. The chart on page 19 shows some of the advantages and disadvantages of each approach.

Regardless of the approach chosen, some of the more typical problems experienced in Intra-European cooperative ventures have been

- Multinational management organizations have a tendency to become large and unwieldy resulting in increased cost and time-consuming decisionmaking processes.
  
- In staffing multinational ventures, there is a tendency to duplicate the work of national authorities which may add to the national cost of a project.
  
- National representatives assigned to multinational ventures do not always have the same decisionmaking authority as their counterparts, thereby slowing decisionmaking.

	<u>Pilot approach</u>	<u>Cooperative approach</u>	<u>Integrated approach</u>
Principle:	One partner assumes a leadership role.	Both partners form a committee to coordinate leadership responsibilities.	Partners form a new organization to lead.
<u>Advantages and disadvantages</u>			
Leadership responsibilities	Leadership responsibility is clear and certain. One partner is subordinate to the other.	Leadership responsibilities may overlap or be overlooked. No one partner is subordinate to the other.	Leadership responsibilities are focused into one organization. No one partner is subordinate to the other.
Decision-making	Time necessary to coordinate responsibilities and make decisions is minimal.	Decisionmakers are accessible, but the committee may delay decisions.	The management structure may become complex and delay decisions.
Organization and expenses	Partners use existing management structures. Organizational and administrative expenses are minimal.	Partners must organize the committee. Administrative expenses are minimal.	Time to organize the structure may delay project initiation. Administrative and personnel expenses are costly.
National interest	National prerogatives may be lost by the subordinate partner. The leader country usually operates under its laws.	Committee assures national interests are met. Laws of each country usually apply.	Organization assures national interests are met, but the location of the organization may allow flexibility in legal restrictions.
Follow-on projects	Opportunity for follow-on projects is limited.	Opportunity for follow-on projects is limited if the committee is disbanded.	Opportunity for follow-on projects is maximized.

## Standards and procedures

Standards and procedures are tools needed to manage and evaluate a program. As such, governments have set out certain requirements that agencies and contractors must follow. Because governmental requirements vary among nations, Europeans seem to have learned that early agreement on the standards and procedures to be used--waiving in some cases national laws, regulations, and policies--prevents confusion during a project. Some of the more troublesome areas are those relating to (1) quality assurance and testing, (2) accountability, such as government reporting requirements and auditing, and (3) contracting practices. For example:

- In a number of cases, quality control and testing requirements have been comparable. In cases where there are differences, partners have either accepted each other's practices or agreed to adopt a common set of standards. According to several government and industry officials, the introduction of NATO standards eased many of the inconsistencies.
- Compromising and accepting a partner's accounting and auditing standards and procedures has been the usual practice in the past. Government officials in one country said their laws precluded foreign governments from inspecting national records. It has been difficult for some countries to agree on how to perform accounting and auditing functions. West Germany and France, we were told, spent 2 to 3 years negotiating the procedures they would follow when undertaking joint projects.
- Contracting and legal requirements are settled on a case-by-case basis. Some countries negotiate legal requirements which may require waivers from governments, while others thought it best for all participants to follow one country's procedures, foregoing all national laws. Euromissile, for example, follows the contract laws of France.

## WORK DISTRIBUTION

The European approach to work sharing is based on the premise that one partner does not duplicate the work of another. The only apparent deviation from this concept is that Europeans opt for national assembly lines. According to several industry officials, separate assembly lines allow each country to adapt the system to its unique requirements and permits nations to develop the capability to maintain a system once it is operable.



Dividing the work among the partners and, if need be, redistributing tasks to compensate for changes occurring during the program, has sometimes been a difficult problem to resolve. Differing bases have been used for working out sharing schemes. Some have been based on each nation's contributions to the project--procurement quantities and financial commitments often being used as common denominators.

Providing each country an opportunity to gain technology is also a consideration in work sharing. For the most part, European sources did not say work should be divided based on technology, but they did believe each partner should perform in his area of expertise and all partners should have the opportunity to share in technological advancements resulting from the program. Also, it was generally believed that a developer should follow through with production of the item developed.

During the development phase, financial contributions are often the basis for sharing work. However, if countries know before starting a project the quantities each country will buy, then development work sharing is sometimes based on these quantities. Several industries pointed out that developmental work and cost are commonly shared equally because during the early phases, countries are uncertain of the number of products they will want.

During the production phase, Europeans lean toward sharing work based on the quantities each participant purchases. For example, on the Tornado project, Italy, West Germany, and the United Kingdom's work sharing was as follows:

	<u>Quantities purchased</u>		<u>Work sharing</u>
	<u>Units</u>	<u>Percent</u>	<u>in percent</u>
Italy	100	12.36	12.36
West Germany	324	40.05	40.00
United Kingdom	<u>385</u>	<u>47.59</u>	<u>47.64</u>
Total	<u>809</u>	<u>100.00</u>	<u>100.00</u>

The workload for the Tornado is divided into manufacture of major subassemblies in all three countries. British Aerospace builds the front and rear fuselages in the United Kingdom, Messerschmitt-Boelkow-Blohm builds the center fuselages in West Germany, and Aeritalia builds the wings in Italy. Then, the subassemblies are shipped to each participating country for final assembly. Production and assembly

of the engines are done in the same fashion--along a similar work sharing scheme.

In a joint project, particularly difficult problems are currency fluctuations and inflation as well as changes in purchase quantities which distort work and cost sharing formulas previously agreed to. In some cooperative projects, partners have shifted work to compensate for differences. Some officials believed, however, that such adjustments could cause delays and lead to inefficient production.

Several approaches to the redistribution problem suggested by European officials are as follows.

- One gun manufacturer suggested that governments could correct distortions through offsets in certain logistic support areas; for example, ammunition production can be shifted between partners.
- Several companies said that distortions could be corrected in follow-on work. For example, on the FH-70 Howitzer project, the United Kingdom reportedly receives about 36 percent of the production while only buying about 16 percent of the Howitzers. However, we were told the partners will attempt to balance out the differences on the SP-70 Howitzers.
- At one Ministry of Defense meeting, officials said that if work and cost sharing were divided based on the value of purchase quantities, money does not have to cross the borders; that is, each partner absorbs the cost of work performed in its country using its own currency value. This seems to solve the problem of currency fluctuations and inflation, but not the problems in changes in quantity buys.
- Two aircraft manufacturers said there should be a fixed point of reference for work and cost sharing in the agreements as well as an acceptable deviation for adjustments. Accordingly, partners could shift commonly procured accessory equipment to make up differences.
- Some industry officials said a wait-and-see attitude may be best. For example, on the MRCA no adjustments will be made for currency fluctuations or inflation until 4 years after production starts. At that time, the participants will determine what compensations are needed.

## EXPORT SALES

Resolving export sales issues between European partners has at times been a difficult task, often because of differing views on controlling export sales. For example, some ministry officials told us that for political reasons, governments should have the right to restrict sales to certain countries, with each partner having the right to veto the other's sales. Other ministry officials believed that there should be no restrictions on export sales if sales were needed to achieve production economies.

A partner's nationally developed system can at times compete in the export market against a jointly developed system. For example, we were told of one venture where each partner in a joint venture had veto rights on foreign sales. One of the partners had a nationally developed weapon system which was a competitor to the system that was jointly developed. We were told the country with two systems exercised its veto rights in order to promote its nationally developed product. In another interview, a contractor said its company was building a competitive system for export because the cooperative venture in which the company had participated was too restrictive on third country sales.

Various approaches have been used to manage third country sales. Some cooperatives divide sales into territories, sometimes based on previously developed markets. We were told that one advantage of international companies, such as Euromissile, is that they are natural clearinghouses for export sales and tend to downplay the competition between partner countries in export markets. Although the FH-70 was not developed and produced by an international company, the three partner governments used the same concept in that program, establishing a central sales office as a focal point for marketing and sales.

Distribution of sales revenue has reportedly not been too serious a problem. Usually, income is divided according to work and cost-sharing formulas, but currency fluctuations and inflation have sometimes caused problems. Some companies have tried to solve this by requiring payments in the currencies of each partner according to the established work sharing scheme.

## TECHNOLOGY TRANSFER

Governments and contractors in Europe usually agree to transfer technology when entering into a cooperative project. Governments in Europe are generally more cooperative in



COURTESY: WEST GERMAN MINISTRY OF DEFENSE

JOINT VENTURE OF WEST GERMANY,  
THE UNITED KINGDOM, AND ITALY

**PROTOTYPE OF SELF-PROPELLED 155MM HOWITZER (SP-70)**

approving technology transfers when a multinational defense program is involved. However, we were told the reluctance on the part of industry to release proprietary technical information has not been resolved. One government group told us their industry was particularly reluctant to transfer "upstream" technology--that having future potential--to a competitor. Understandably, companies want to protect proprietary information against unauthorized commercial application.

In a European cooperative program, participants usually receive data packages for an entire system regardless of the extent to which they participate. For example, Italy received the data package for the Tornado although its participation was about 12.5 percent. Participants use the information for assembling and maintaining the system and as a contingency in case one country has to set up a production line for parts manufactured by a partner company. Some contractors, however, may restrict the use of technical data provided by a partner. For example, one contractor told us that the technology package for a major codeveloped system, although passed on to each of the partners, contained restrictions on each partner's production of components provided by a subcontractor.

Because of the various technology transfer complications which may be encountered in a cooperative program, some European officials stressed the importance of early discussion and agreement on the part of both government and industry to resolve technology transfer issues.

## CHAPTER 3

### PROSPECTS FOR TRANSATLANTIC CODEVELOPMENT--

#### EUROPEAN VIEWS

Europeans have cooperatively developed a number of weapon systems. For a variety of reasons, they have been able to overcome many of the problems impeding multinational codevelopment. But from the European perspective, these barriers will be more difficult to overcome on a transatlantic scale--mainly because the motivations and factors that have facilitated intra-European codevelopment exist to a lesser degree when viewed in a transatlantic environment.

Because they foresee some major problems, the Europeans were not overly optimistic that transtalantic codevelopment and subsequent coproduction would become an everyday approach. The most oft-mentioned problems they perceived were (1) the industrial edge the United States has over Europe which could give the United States too dominant a position in any collaborative venture, (2) restrictive U.S. policies in arms sales and technology transfers, and (3) procurement practices which the Europeans felt were inappropriate for transatlantic codevelopment arrangements.

Essentially, Europeans were not certain the United States is sufficiently committed to this form of collaboration. They viewed other options to cooperation as perhaps more feasible, although not ruling out possibilities for codevelopment and ensuing coproduction.

#### DIFFERING MOTIVATIONS

Various economic, political, and military considerations have motivated European nations to work together in developing weapon systems. These considerations seem to be drawn together into the overriding motivation that through cooperation they will be able to maintain their national defense industries. As well as being politically desirable, having one's own defense industry offers economic and technological opportunities that would not be present otherwise.

Overall, Europeans see little economic motivation for the United States to engage in multinational codevelopment. They view U.S. support for weapons collaboration as based more on the military benefits of standardized armaments to the alliance.

Economic factors are  
primary motivators

Economic considerations appear to be the primary factors influencing European cooperation. European officials indicated that their nations would prefer to develop major weapons independently. But the costs to individually develop and produce today's sophisticated weapon systems are excessive--particularly in the aircraft industry. By sharing development and production cost, they are able to field European-developed armaments at a cost they can afford. Even though the total cost of a jointly developed system is generally more expensive than a single nation development, each participant's share is normally less than building a system alone.

Another economic incentive for joint developments is the small weapon quantities needed by individual European countries. Through joint ventures, production quantities are increased resulting in more economical production runs. By cooperating in the export market with jointly developed systems--instead of competing with nationally developed systems--markets can be consolidated resulting in further opportunities to improve production economies.

Equalizing the balance of trade is another factor. Codevelopment and coproduction offer opportunities to reduce trade imbalances because part of the value of a system is produced by each partner. Consequently, each partner's foreign outlay is reduced in proportion to the value of the system each partner produces.

Employment and technological advancement were also frequently cited as motivators for codevelopment and coproduction. From a political point of view, it becomes increasingly difficult for a nation to justify large defense purchases abroad when unemployment at home is a vital concern. Leaders also realize that to maintain a national defense industry they must assure continuing research and development. For this reason, many industries we talked to prefer codevelopment and coproduction over purchases or licensed production. Off-the-shelf procurements contribute very little to a nation's research capability and, while licensing provides technology transfer, it limits the opportunity for scientific advancement normally achieved in developing a system.

In contrast, Europeans view the United States as less economically motivated to codevelop and coproduce weapon systems. The European perspective is that the United States (1) can achieve production economies without cooperation

because of its large military procurements, (2) has a substantial export market which adds to these economies, and (3) has the funds to support a broad technological base in the weapons area. In essence, the Europeans see the United States as having the capabilities and resources to go it alone. Cooperation in their view will require the United States sharing some of its production quantities, sales, or technology.

#### Standardization considerations appear secondary

While standardization appears to be a major factor influencing the United States to initiate transatlantic cooperative ventures, officials in only one of the four countries we visited said standardization was a primary motivator behind their cooperative projects. In the other countries standardization was not the primary motivator but just one influencing factor in justifying a cooperative project at the political level. The European experience is not to press for complete commonality in initiating a project.

#### Other inducements to codevelopment

Together with the economic, political, and military motivations to cooperate, certain conditions in Europe have had a definite influence on the ability of the Europeans to work out cooperative arrangements. The following were mentioned as factors which have encouraged intra-European codevelopment.

- The geographical proximity of European countries provides a natural environment for cooperation.
- The relatively small number of European companies in the defense field and the close ties between governments and industry downplays the need for competition in selecting weapon contractors.
- The general economic, industrial, and technological parity among the major partners allows for equitable participation and work distribution among nations.
- Similar business customs and practices have eased multinational dealings.

#### MAJOR PROBLEM AREAS

Agreeing to a common need is one of the key barriers to weapon system cooperation. This problem was reiterated



often in our discussions with European officials. Before codevelopment can occur, two or more countries must (1) have a basic requirement for a similar operational capability in the same time frame, (2) be able to agree on the type of weapon needed to achieve the desired capability, and (3) be able to agree on the performance characteristics of the needed weapon. Since these were generally accepted as a necessary precondition to codevelopment, we focused more on the problems impeding codevelopment once there is agreement on requirements.

The officials we interviewed foresaw several problem areas that would require resolution or compromise to facilitate transatlantic codevelopments of weapon systems. Not everyone identified the same problems nor was there agreement on the gravity of each problem area, but four basic problem areas emerged as being more troublesome. They included equal partnership concerns, technology transfer restrictions, conflicting export sales policies, and weapon acquisition practices.

#### Equal partnership concerns

U.S. capabilities and needs could overshadow Europe's, making equal partnership difficult. The technological and industrial capabilities of the U.S. defense industry, coupled with U.S. military requirements, would sway or slant cooperative development and production ventures to favor U.S. interest. Some specific problem areas mentioned were work and cost sharing and project leadership.

As an example, we were told that in structuring a project the quantity of weapons each nation buys is often used to apportion cost and work between the partners and also can be used in determining the number of key management positions that will be held by each partner in the organization managing the project. Using the number of end items to structure transatlantic codevelopment and ensuing coproduction ventures would in most cases weigh a project heavily in favor of the United States, because the United States normally requires more weapons than most countries. For example, the United States has an inventory of over 10,000 heavy and medium tanks worldwide--the combined inventory of the other NATO partners is approximately 12,000. The F-16 aircraft is another example of U.S. needs exceeding European requirements. The United States plans on buying 650 F-16s--four of the NATO allies will buy a total of 348 planes.

The above two examples illustrate that even in a combined European multinational venture with the United States, U.S.

needs may be significantly greater than Europe's. Several European officials suggested that for transatlantic cooperation to succeed, the United States may have to compromise on work sharing, accepting a lesser share of the work than what may be mathematically proportionate. The underlying theme in our discussions was that U.S. dominance would make project management difficult--both in negotiating critical areas, such as system performance characteristics and setting project milestones, as well as making day-to-day management decisions.

#### European production capabilities

Related to the issue of dividing the work is the question of European capabilities to produce the quantities of end items that would be required in U.S./European coproduction ventures. In commenting on this question, Europeans seemed to be more concerned with employment considerations rather than plant and equipment capabilities. Stable employment over long periods of time is a major concern to both industry and labor in Europe. As such, the European practice is to match production schedules with long-term national employment objectives. Correspondingly, two and three shift production operations, often used in the United States to meet production schedules, are not common in Europe. Complicating the employment problem is the immobility of the European work force. European workers are not prone to move to different locations to find employment. This also has to be considered in planning production. One official suggested that U.S. production schedule needs could be met more easily if European contractors subcontracted quantities that they could not produce alone in a timely manner.

#### An independent U.S. production line

Another issue in dividing up the work is the U.S. desire to have its own independent production line for national security reasons in order to guarantee availability of the equipment during an emergency. Some officials accepted or understood the U.S. position on having its own production capability; however, a sizable number believed this would be a major problem in transatlantic codevelopment and coproduction endeavors. The thinking is that Europe would lose out on production economies if a separate production line is set up in the United States to manufacture U.S. quantity needs. It was pointed out that a dedicated U.S. production capability would give the United States an advantage over its European partners if the partnership became strained. One contractor suggested that an agreement to channel all export sales production to the European production line may be a possible economic solution to this problem.

The above comments on work sharing and production scheduling problems illustrate the European concern over the possibilities of U.S. dominance in codevelopment and coproduction ventures. One government official commented that a successful partnership requires balance and should not be dominated by one partner, referring to the United States. An official of another government warned that its contractors would not want to end up as mere subcontractors to U.S. contractors in cooperative deals.

### Technology transfer restrictions

Restrictions on the free flow of technology used in cooperative ventures, we were told, would complicate cooperation. Reportedly, Europe has developed an adequate technological base in many areas and is fully capable of fielding many top-notch weapon systems. But, Europeans realize that the United States is more technologically advanced in specific fields and see transatlantic cooperation as an access to this technology. Two types of technology restrictions impede cooperation: (1) those imposed by governments to safeguard security information and (2) those imposed by industry to protect its rights and manufacturing know-how.

U.S. Government policies on the flow of technology were cited as being overly restrictive and were viewed as a major problem area that would have to be resolved before transatlantic cooperation can improve. Included in the dislike for U.S. restrictions are the time-consuming U.S. Government processes for approving technology transfer requests. Some officials told us projects had been delayed up to 2 years because of the U.S. approval process. In contrast, we were told there is a relatively free flow of technological information between European countries when an international project is involved.

Contractor proprietary rights were also cited as a major technology transfer problem. According to information obtained at the U.S. Mission to NATO, differences in the way governments obtain and use proprietary information can vary. One of the critical issues is the ownership of rights to technology used in a program. In some projects, governments may obtain unlimited rights to use proprietary information in any way they deem necessary. In other programs they may obtain limited rights to the contractor technology. In entering into cooperative ventures, governments must ensure that they have complete title and authority to transfer proprietary rights to other governments.

Another technology transfer problem is differing U.S. and European practices on the subsequent use of technology developed during a program. The U.S. position has been that technology developed in a joint project should be available to participants for all defense purposes. Some Europeans, on the other hand, restrict jointly developed technology to program purposes only--for example, the system jointly developed.

Recognizing the problem, the NATO Group on Intellectual Property (AC/94) has investigated the various authorities and regulations in NATO countries relating to proprietary rights. The group has outlined causes for technology transfer problems. Some of these are as follows:

- Before signing memorandums of understanding, nations have not fully consulted with industry concerning all the conditions and obligations of their proprietary information.
- Proprietary rights are sometimes not clearly and precisely stated in agreements, and participants have failed to make provisions for transferring technology to additional partners at a later stage.
- Terms used to define user rights in agreements to cooperative programs have lacked precision.

In hopes of alleviating or at least making governments aware of the problems, the AC/94 group has published documents pertaining to technology transfer problems. Some areas covered are (1) guidelines for preparing memorandums of understanding and contracting, (2) a glossary of terms commonly used in connection with industrial property, (3) a collection of national laws and procedures regarding proprietary rights, and (4) an analysis of the NATO agreement on the communication of technical information for defense purposes. NATO officials told us the group is continuing to study this subject.

#### Conflicting export sales policies

Over half the officials we met indicated that export sales would be a potential problem area in transatlantic cooperation. The European emphasis on sales was illustrated by one contractor in commenting that about 70 percent of his country's weapon production was for export. Similarly, an industry official in another country told us that contractors in his country exported as much as 50 to 80 percent of their military production. Of the countries we visited, West Germany is reported to be the most conservative on sales.

Some believed that European governments which depend heavily on export sales would not look with favor on U.S. arms export policies, which they viewed as being too restrictive.

But just as the Europeans are concerned over U.S. arms export policies, export sales have been a difficult area in intra-European ventures. For example, a contractor we visited expressed frustration at being denied permission to sell a European-developed system it was producing under license.

Europe has also placed restrictions on some European items that have been licensed for production in the United States. We were told of two agreements licensing U.S. contractors to produce European systems which placed export sales restrictions on the U.S. producers.

Export sales will no doubt be a major issue in negotiating transatlantic weapons collaboration agreements. But, considering various European comments, the magnitude of the problem may be no more than that experienced in intra-European ventures.

#### Weapon acquisition practices

Europeans told us that for transatlantic cooperation to occur, there would have to be negotiation and compromise on U.S. policies and practices followed in procuring weapon systems. Some of the specific areas brought up involved procurement and contracting procedures and U.S. year-to-year funding and approval processes.

In January 1978 the Congressional Research Service of the Library of Congress prepared a report on defense procurement statutes that have adverse impacts on U.S./NATO standardization efforts. Impediments to cooperation listed in the report are as follows.

- Buy-America Act.
- Department of Defense balance of payments policy.
- U.S. restrictions on overseas procurements of certain goods.
- U.S. restrictions on foreign procurement to protect the U.S. economy and industrial base.
- U.S. restrictions on foreign research and development contracts.

- Examination of contractor records.
- Submission of cost and pricing data requirements.
- U.S. cost accounting standards.

We did not develop a comprehensive list of U.S. procurement practices that, in the European view, could limit transatlantic cooperation. The general comment was the United States would have to be willing to compromise as the Europeans have done, sometimes deviating significantly from national practices. For example, U.S. Government audit organizations, such as GAO, may not be allowed to perform contract audits of foreign contractors. The contract audit requirements would most likely have to be performed by comparable audit organizations in partner countries.

Another area that was mentioned more than once was the U.S. Government's paperwork requirement. One contractor viewed the cost of paperwork studies, decision processes, and project administration to meet U.S. requirements as excessive and thought the funds could be spent better on hardware. Another contractor claimed that they would have to hire a consultant to assist them in preparing the paperwork required in U.S. procurement regulations. A third contractor also noted the higher administrative cost associated with the U.S. procurement process, but, at the same time, commented that project management was one area they would hope to improve on in working jointly with the United States.

Long-term funding of a project was another issue mentioned. Some officials said the U.S. practice of funding weapon systems on a yearly basis does not provide the long-term assurances that would be needed before entering into a cooperative venture. They said that in their country a decision to go ahead with a project usually meant at least a 5-year commitment. We were told by others that the United States must be prepared to make a firm commitment to a project--both monetarily and politically--if cooperation is to work on a transatlantic basis. Still, the aborting of projects before completion of development is not unknown in Europe.

#### Competition in selecting contractors

Most European countries reportedly have no more than two major contractors in any one weapon system field--many having only one. Also, the defense industries are closely tied into the government--nationalized or wholly owned in many instances. Thus, competition does not have the importance in Europe that it has in the United States, nor do the

Europeans, we were told, have the resources to invest in costly prototype competitions.

Others felt that the risk in losing out in competition may be worth the technology that could be gained in joint development. One contractor commented that the risks would have to be evaluated against production opportunities. Several officials commented that competition would not be a major problem in transatlantic cooperation.

In the fall of 1977, we visited several U.S. weapon system contractors to obtain their views on transatlantic codevelopment.

They commented that the U.S. practice of selecting contractors based on prototype competition would be a major problem to the European governments and defense industry in moving toward multinational ventures. Our European interviews indicate that to some this is a troublesome area, but it appears to be a lesser concern than other areas such as export sales and technology transfer.

#### IS TRANSATLANTIC CODEVELOPMENT LIKELY?

All the European governments and nearly all the contractors we interviewed indicated interest in increasing weapon system cooperation with the United States. But just as there was general agreement on the desire for more cooperation, there was also a large degree of uncertainty, hesitancy, and skepticism as to whether cooperation would increase in the near future and also just how increased cooperation would be accomplished.

Although no one absolutely ruled out transatlantic codevelopment followed by coproduction as a means of cooperation, the overall preference seemed to be for other, more arms-length, forms of cooperation such as direct sales, licensed production, coproduction of a nationally developed system, or some variation of the family of weapon systems approach to fielding weapon systems. Under the family of weapon systems approach, partner nations agree to develop two or more systems with each partner having development and production authority for at least one particular system. Upon completion, each nation can buy the system developed and produced by the partner or can obtain a license to produce it.

Ministry of Defense officials we interviewed seemed more pessimistic than contractors on any positive achievements in transatlantic cooperation in the near future.

Officials of one government expressed the view that as long as the United States could afford to develop and produce its own weapon systems, there would be little U.S. interest in cooperation. But they did comment that they would be watching to see what happens as a result of recent U.S. executive and legislative initiatives regarding standardization of weapon systems. Officials of another government also were not optimistic over chances for improving multinational development and production of weapon systems. They, too, indicated that perhaps the recent U.S. initiatives could increase cooperation. They also commented that other NATO and Independent European Program Group efforts could stimulate U.S./European cooperation. In another country, government officials told us they foresaw no prospects for cooperation unless the cooperation would reduce the imbalances of defense trade between the United States and Europe. They said their focus was on developing intra-European cooperation more than working with the United States. Ministry officials of the fourth country we visited commented that codevelopment would be hard to visualize on a transatlantic basis.

Supposing that codevelopment could become more attractive as an approach to transatlantic cooperation, we asked if such ventures should be approached bilaterally or whether a multilateral approach would be more desirable. There was a range of responses to our question with no clear consensus. Some officials felt that bilateral cooperation would be feasible; others, viewing the United States as too large to work with on an individual basis, suggested multilateral arrangements. Multilateral schemes mentioned included (1) ventures between the United States and several European countries put together on a case-by-case basis, (2) ventures between the United States and established European multinational weapon producing companies, and (3) transatlantic ventures arranged through IEPG.

In the past there have been attempts to codevelop both commercial and military systems. But for a variety of reasons there has been limited success. Many projects have been aborted in the early stages. Several commercial ventures currently being undertaken suggest that the climate for transatlantic cooperation may be improving.



## CHAPTER 4

### CONCLUSIONS, RECOMMENDATIONS, AND COMMENTS

#### FROM GOVERNMENTS AND INDUSTRY

##### CONCLUSIONS

Industrial collaboration in developing and producing weapon systems for the North Atlantic Treaty Organization is already a reality in Western Europe.

The trend to multinational cooperation in Europe is of special significance to the United States. The emergence of a strong, viable European defense industry will contribute to a stronger alliance. At the same time, European multinational cooperation could result in increasing numbers of European-designed weapons in NATO. The probability of this occurring is illustrated by the fact that a predominance of European-developed equipment already exists in the main battle tank field.

There is little prospect that the United States would buy more than a very few European systems to meet its needs. Rather, the likelihood is it will continue developing its own systems. If these trends continue--Europe and the United States going their separate ways--it would represent a setback for standardization. Opportunities for conservation of financial resources would be lost as a result of this proliferation.

An alternative course would be for the United States and Europe to collaborate in developing some of NATO's future armament needs. European government and industrial interests retain a willingness to cooperate with the United States. The reasons are clear: such cooperation offers major opportunities for enhancing technology, gaining access to larger markets, and achieving more efficient production capability. The importance of these considerations will probably mitigate some of the problems Europeans foresee in making transatlantic cooperation a reality.

There are things the United States can do to smooth the way for increased cooperation. For example, some flexibility in U.S. arms sales policy, in procedures governing technology transfers, and in procurement practices, would alleviate some obstacles complicating U.S. participation in codevelopment ventures.

For the present, the United States has been negotiating differences with other program participants on a case-by-case basis and has granted waivers to existing practices and procedures where appropriate. However, the United States should prepare for the day when weapon system codevelopment programs with members of the alliance will become more prevalent. A rethinking of arms sales and technology transfer policies is in order. Procurement regulations and practices conceived for the domestic environment should be reviewed from the standpoint of their applicability to transatlantic codevelopment. By the same token it is to be expected that the European participants will have to make similar accommodations in order for the collaborative programs to succeed.

Changes in our laws, regulations, and policies should not be made without considering the effect they could have on national concerns such as the balance of payments, the industrial base, and the transfer of technology.

#### RECOMMENDATIONS

We recommend that the President establish a group drawn from government and private industry to identify and propose any needed changes in policies and procurement practices which could facilitate transatlantic codevelopment. The Government agencies represented should include the Departments of Defense, State, the Treasury, Commerce, and Labor. The group should consider the effect any proposed changes would have on national policy objectives related to national security, the balance of payments, the industrial base, and technology transfer and make suggestions for resolving any apparent conflicts.

We believe that a group such as that proposed is needed to bring to bear a broader perspective of how changes to existing policies might affect national interests. DOD and State both have, in our view, parochial perspectives. DOD, on the one hand, is concerned about maximizing military effectiveness of the NATO alliance, while State is naturally concerned about U.S. relationships with those countries.

Whatever the group concludes as to the level of codevelopment to be achieved, it will be necessary for it to address the following issues which impede these activities.

- U.S. laws and procurement regulations which impede cooperative development programs.
- U.S. arms export policies which restrict opportunities for greater U.S. involvement in codeveloping programs.

--The policies which restrict technology transfer and the reasons for this restriction.

COMMENTS FROM GOVERNMENTS AND INDUSTRY

We requested comments on a draft of this report from several U.S. Government agencies, European ministries, and contractors both in Europe and in the United States. The reaction from those who responded was uniformly favorable. Some suggested changes to the text have been considered in the report.

However, the Departments of State and Defense each took exception to the proposition that changes to U.S. policies and practices affecting transatlantic codevelopment are not warranted at this time.

State said the administration is prepared to move cautiously and would avoid radical changes. Defense said the United States already has sufficient experience supporting a need for changes in procurement-related laws and cited about 20 projects in various stages of development as evidence.

While several of them had some elements of a cooperative program, not many of the 20 represent codevelopment projects. Six were developments started by the United States where foreign interest surfaced later. Five are still in the early conceptual stage. Three involve separate developments by two or more countries. One involved a cooperative test program. Another was a foreign system which the Navy concluded did not meet its requirements.

But the main point that should not be overlooked is that more than modifications to procurement-related laws or regulations should be considered before codevelopment programs begin to occur more frequently. In our opinion, the policy and other changes that are needed are too far reaching to be made without further study of the implications they hold for national objectives. This seems to require the expertise of a group of individuals drawn not only from the Departments of State and Defense, but also from other agencies and from private industry.

In a draft of this report we had proposed that the Director of the Office of Management and Budget serve as a focal point for the group making the study. Both State and Defense believe components of their departments are better suited to heading the group. In view of the number of Government agencies whose representation would be required

in the group, we are leaving the group's organization to the discretion of the President.

The comments by State and Defense appear in appendixes III and IV.

LIST OF GOVERNMENTS AND CONTRACTORS CONTACTEDFrance

Aerospatiale, Paris  
Avions Marcel Dassault-Breguet Aviation, Vaucresson  
Matra S.A., Velizy  
Thomson-CSF, Paris  
French Ministry of Defense, Paris  
U.S. Embassy - Office of Defense Cooperation, Paris

Italy

Aeritalia, Turin  
Fiat, Turin  
Gruppo Agusta, Milan  
OTO Melara, La Spezia  
SNIA-Viscosa, Rome  
Italian Ministries of Foreign Affairs; Defense; Industry,  
Commerce and Handicraft, Rome  
U.S. Embassy - Office of Defense Cooperation, Rome

United Kingdom

British Aerospace, London  
Rolls Royce Limited, London  
Vickers Limited, London  
United Kingdom Ministry of Defense, London  
U.S. Embassy - Defense Attache Office, London

West Germany

Krauss Maffei Aktiengesellschaft, Munich  
Messerschmitt - Boelkow - Blohm GmbH, Munich  
Motoren-und Turbinen-Union, Munich  
Rheinmetall, Duesseldorf  
Federal Republic of Germany Ministry of Defense, Bonn  
U.S. Embassy - Office of Defense Cooperation, Bonn

## APPENDIX II

## APPENDIX II

SELECTED EUROPEAN CODEVELOPMENT  
AND COPRODUCTION PROJECTS

<u>Cooperative project</u>	<u>Partners</u>		<u>Name of multinational company</u>	<u>Type cooperation</u>	
	<u>Country</u>	<u>Contractor</u>		<u>Codevelopment</u>	<u>Coproduction</u>
PUMA Helicopter GAZELLE Helicopter LYNX Helicopter	France United Kingdom	Aerospatiale Westland	None	X	X
MILAN Anti-tank missile HOT Anti-tank missile ROLAND Surface-to-air missile	France West Germany	Aerospatiale Messerschmitt Boelkow-Blohm	Euromissile	X	X
TRANSALL C160 military transport aircraft	France West Germany	Aerospatiale Messerschmitt Boelkow-Blohm VFW Fokker	Transall	X	X
ATLANTIC Maritime patrol aircraft	France West Germany The Netherlands Belgium	Various contractors in all four countries		X	X
ALPHAJET advanced training aircraft	France West Germany	Dassault Dornier	None	X	X
JAGUAR tactical support aircraft	France United Kingdom	Dassault British Aerospace	SEPECAT	X	X
MIRAGE-F-1 jet fighter	France Belgium	Dassault SABCA Fairey	None		X
MARTEL Air-to-surface missile	France United Kingdom	Matra Hawker-Siddeley	None	X	X
OTOMAT Anti-ship missile	France Italy	Matra OTO Melara	None	X	X
TORNADO Multi-role combat aircraft (MRCA)	West Germany United Kingdom Italy	Messerschmitt-Boelkow-Blohm British Aerospace Aeritalia	Panavia	X	X
F11-70 Field howitzer SP-70 Field howitzer	West Germany United Kingdom Italy	Rheinmetall Vickers OTO Melara	None	X	X
RB 199 jet engine for TORNADO aircraft	West Germany United Kingdom Italy	Motoren-und Turbinen-Union Rolls Royce Fiat	Turbo-Union	X	X
ADOUR jet engine for JAGUAR aircraft	France United Kingdom	Turbomeca Rolls Royce	Rolls Royce Turbomeca	X	X



RESEARCH AND  
ENGINEERING

THE UNDER SECRETARY OF DEFENSE  
WASHINGTON, D.C. 20301

201 1979

Mr. J. H. Stolarow  
Director, Procurement and Systems  
Acquisition Division  
U. S. General Accounting Office  
Washington, D. C. 20548

Dear Mr. Stolarow:

This is in reply to your letter to the Secretary of Defense regarding your report dated 22 August 1978, on Transatlantic Cooperation in Developing and Producing NATO's Weapons Systems - A European Perspective, (OSD Case #4990), (Code 951363).

In general, we commend the draft report. It reflects many of the concerns of our NATO allies which have been identified to the U.S. frequently. Although in our view the treatment of U.S. experience is inadequate, the report does present useful information on European experiences in the multinational cooperation and on European perceptions of U.S. and European practices in this area. Our primary reservations concern the draft report's conclusion and recommendations as well as insufficient treatment of current DoD initiatives.

After giving due recognition to the value of multinational cooperation as an avenue toward improved NATO standardization, and after building an excellent case for modifying U.S. policies and practices to facilitate such cooperation, the GAO concludes that changes are not warranted until more experience with transatlantic codevelopment programs is obtained. We challenge that conclusion. The United States has had ample experience with these programs. The latest annual report of the Secretary of Defense to the Congress, pursuant to the Nunn Amendment concerning rationalization/standardization within NATO, lists approximately 20 projects in various stages of codevelopment that are now underway between the U.S. and its NATO partners. (Report reprinted in Department of Defense Appropriations for 1979: Hearings Before a Subcommittee of the House Committee on Appropriations, 95th Congress, 2d Sess. Part IV, 236-261, 1978). These experiences have served to bring to the fore the aspects of U.S. procurement-related laws that pose obstacles to cooperation in development. Indeed

the GAO draft report entitled "A New Approach for Establishment of Coproduction Programs Between the United States and American Allies" (OSD Case #4997) addresses these laws in detail, identifying them as "critical areas where waiver or modification of procurement regulations may have to be considered if further industrial participation programs are to be encouraged and significant ventures of this kind undertaken."

The report suggests that for the present we resolve "policy and procurement differences" with prospective transatlantic partners on a case-by-case basis through negotiation and waiver. We have used these means to the fullest possible extent to resolve these difficulties. Many of these differences are traceable to affirmative requirements of U.S. law, including those enumerated on page 44 of the report that we are not permitted to negotiate or waive.

The draft report looks to the day when weapon system codevelopment projects with our allies will become more prevalent. That day has arrived. The removal of the impediments to cooperation presented by our statutes is a present-not prospective-need. The procurement-related laws conceived for domestic application that are objectionable or unusual in the context of contract performance in foreign countries are generally known. (See Department of Defense Authorization for Appropriations for Fiscal Year 1979; Hearings before Senate Armed Services Committee, 95th Congress, 2d Sess., Part 2, 1581-5 (1978).) There is no need for the review suggested on page 50 of the draft report. The immediate need instead is for statutory authority that will enable us to establish, with allied governments, procurement practices for codevelopment schemes that are practicable and are consonant with the public interest of the United States. H.R. 12837 was introduced for that purpose in the 95th Congress. We welcome GAO support, assistance and suggestions in moving forward to meet that need.

The report recommends that the Director of the Office of Management and Budget should head an interagency task force (which would include industry representation) to identify changes in policy and practices. We feel that the office of OMB should take part in this review, we question however whether OMB is the proper agency to chair such an effort. In our view, the Department of State, Office of the Director for Politico-Military Affairs, together with the Assistant Secretary, International Security Affairs, and the Under Secretary for Defense Research and Engineering in the Department of Defense, are the proper lead elements of the Executive Branch to monitor such a project, and develop the appropriate policy and procedural guidance.

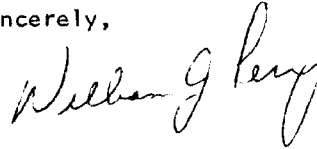
Lastly, we feel that the report is incomplete in that it fails to identify the many initiatives ongoing in the CNAD, Four Power Group, TAD, etc. which help encourage our European allies toward greater



cooperation and promote the goals of NATO standardization and interoperability. In need of highlighting are the reciprocal defense procurement MOU's, Family of Weapons approach, and intensive DoD-industry dialogue.

Our detailed comments will be found in the enclosure. None of these comments are classified.

Sincerely,

A handwritten signature in cursive script, appearing to read "William G. Perry".

Enclosure



## DEPARTMENT OF STATE

Washington, D.C. 20520

December 28, 1978

Mr. J. Kenneth Fasick  
Director  
International Division  
U. S. General Accounting Office  
Washington, D. C.

Dear Mr. Fasick:

I am replying to your letter of August 22, 1978, which forwarded copies of the draft report: "Transatlantic Cooperation in Developing and Producing NATO's Weapon Systems -- A European Perspective."

The enclosed comments were prepared by the Deputy Assistant Secretary for the Bureau of European Affairs.

We appreciate having had the opportunity to review and comment on the draft report. If I may be of further assistance, I trust you will let me know.

Sincerely,

*Edward M. Guller*

*for* Roger B. Feldman  
Deputy Assistant Secretary  
for Budget and Finance

Enclosure:  
As state.

GAO DRAFT REPORT: "TRANSATLANTIC COOPERATION IN  
DEVELOPING AND PRODUCING NATO'S  
WEAPON SYSTEMS -- A EUROPEAN  
PERSPECTIVE"

The Department of State appreciates the opportunity to comment on the Comptroller General's proposed report to the Congress you forwarded on August 1978 entitled Transatlantic Cooperation in Developing and Producing NATO's Weapon Systems -- A European Perspective.

We agree with the thrust of the GAO report, which was undertaken to "assess the potential for greater industrial collaboration between the United States and Western Europe". Specific conclusions and recommendations (as stated in Chapter 4) include:

1. That European defense technology is increasingly sophisticated, and that European multinational cooperation is growing, both of these trends producing more European-developed weapons systems.

Department Comment: We agree with this assessment and that this is in the interest of the Alliance.

2. That trends in the recent past have been for the U.S. and Europe to go their separate way, with a consequent increase in de-standardization and waste of Alliance resources.

Department Comment: We agree that the U.S., for its part, should show greater flexibility in arms transfers, technology transfer, and procurement practices. This is precisely the direction that this Administration is moving in. (We believe, however, that the assertion that there is "little prospect that the U.S. would buy more than a very few European systems . . ." is overstated.)

3. That the U.S. should delay such changes in its approach until we have gained more experience with transatlantic co-development.

Department Comment: Our European Allies would probably interpret such a delay as U.S. unwillingness to increase arms collaboration, regardless of our explanations, and opt to go their own way -- as the report suggests. In addition, the long lead time for procurement of weapons requires that we must begin to cooperate now on systems which we will need in the late 80's and

early 90's. Further, we intend to avoid radical, rapid changes in our arms sales, technology transfer, and procurement policies -- which we assume are the GAO's concern. The Administration intends to make such adjustments with caution and in consultation with the Congress.

4. That OMB should superintend adjustment in the U.S. approach to transatlantic arms collaboration.

Department comment: We strongly disagree. The Department of State and Defense are cooperating closely, and are in touch with the appropriate Congressional Committees, to work out such adjustments. These Departments are also coordinating with the National Security Council staff, which is the White House staff agency primarily responsible for U.S. foreign and security policies. It would be appropriate and maybe desirable, however, for the AECB to undertake to review all types of cooperative production arrangements with the PD/NSC-exempt countries. The AECB could prepare updated policy guidelines more specific than those given in the President's statement of May 19, 1977, and the Secretary of State's Report to Congress of June 1977. This would ensure that interagency procedures and practices are consistent with State's policy.

The GAO report gives an extremely useful description in Chapters 2 and 3 of our European allies' efforts to strengthen arms cooperation among themselves, the problems involved, and the problems our allies see in moving into closer collaboration with the U.S. there are, however, specific points which require comment throughout the report:

5. Department Comment: These chapters understate the problem of accommodating differing national requirements in timeframe and performance capability in reaching initial agreement. This problem, which is adequately covered on pages 36-37, needs to be highlighted on pages 8, 11 and 13 and in the introductory section (pp iii, iv). This would also help to balance an over-emphasis on European economic motivation in collaborative projects.

6. Department Comment: We would place a higher emphasis on the inability of individual European countries to afford separate development programs for high-cost, high-technology equipment as motivating the trend toward intra-European collaboration. This is alluded to on page 9 but not adequately handled on pages (1st paragraph), 33 and ii which describe European motivation.
7. The Digest proposes an analytical framework for the discussion of armaments collaboration.

Department Comment: The use of "standardization" and "interoperability" would be more helpful and less confusing if the NATO official definitions were used:

-- "Standardization" refers to degrees of similarity covering a range from identity (commonality) through interoperability to compatibility.

-- "Interoperability" refers to equipment which can utilize common consumables, such as fuel, ammunition or even spare parts; or data systems (e.g., communications) which can interface. (Compatibility merely means the ability to coexist, e.g., a radio set and a radar when neither will jam the other.)

When these definitions are used, it becomes apparent that interoperability is a special form of standardization and can be sought as a short-term (although expensive) means of increasing military effectiveness since it can be applied to current inventories.

8. The description on p. i-ii of how to achieve standardization lists two means.

Department Comment: It is clearer and more accurate to list three: defense trade, cooperative production of a system developed by another country, and cooperative development (p.i). Trade (import) results in an outflow of foreign exchange and little or no advance in technology or production base (including the politically sensitive question of lost opportunities for employment). Cooperative production provides

foreign exchange savings, employment and production knowhow. Cooperative development has these advantages to an even greater degree (p. ii).

9. Page i, first sentence.

Department Comment: Standardization is seen as a means of improving performance on the battlefield and commonality as a means of providing cost-savings. A reduction in defense budgets is not a necessary or probable result.

10. Page i - The description of the "two-way street" and co-development as mutually exclusive approaches to standardization and interoperability.

Department Comment: In our conception of the approach, this is not the case; co-development can include also, for example, Alliance agreement to have one nation develop and produce a particular weapons system. In addition, the two-way street applies only to trade between Europe and the U.S., not intra-European trade.

11. Page 11, last para, line 3, after "political" add "military".

Department Comment: The report fails to recognize that lack of military commitment, often based on national military doctrine or strategy, is sometimes a reason for failure to agree on a weapon system.

12. Page 11, last para, line 4, after "well-defined", add "mutually acceptable."

Department Comment: It is not enough to simply define the requirements. The major issue is to define requirements which are mutually acceptable and which can result in political and military commitment.

13. Page 46 - The description of the weapons family concept.

Department Comment: The concept is not limited to one-country development of one weapon system in a family; rather, it allows for two or more

nations or a consortium of industries from one or more NATO Allies to develop a given weapon system. Secondly, the concept is not limited to production of a given weapon by the nation that has developed it; rather, that weapon could be produced under license also by other NATO partners.

  
James E. Goodby  
Deputy Assistant Secretary  
Bureau of European Affairs

(951363)





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